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AUTHOR Harrison, R. W.; And Others

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ABSTRACT

The worksheets have been developed for use with any production occupational or work experience record book for high school vocational agriculture programs. Separate units have been developed for each of 11 areas in ornamental horticulture, so the student and teacher can select the appropriate one, or several, for the experiences planned by the student. The areas are: flower shop employee; greenhouse crops; landscape maintenance and establishment; nursery production; field grown crops; field grown trees; field grown shrubs; container grown plants; and turfgrass maintenance, establishment, and production. Within each area, the five following record sheets are provided: approved practices, goals, efficiency factors, cost accounting or employment achievement, and analysis. (Author/KJ)

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APPENDIX E

SUPERVISED OCCUPATIONAL EXPERIENCE RECORD FORMS for ORNAMENTAL HORTICULTURE

(REVISED)

1974

MASTER SET

Flower Shop Employee
Greenhouse Crops: Potted Plants
Greenhouse Crops: Cut Flowers
Outdoor Flower Crops
Landscape Maintenance and Establishment
Nursery Production: Field Grown Crops
Nursery Production: Field Grown Shrubs
Nursery Production: Container Grown Plants
Turfgrass Maintenance, Establishment, Production

Department of Agricultural Education
College of Agriculture
The Pennsylvania State University
University Park, PA
in cooperation with
Bureau of Vocational Education
Pennsylvania Department of Education
Harrisburg, PA

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SUPERVISED OCCUPATIONAL EXPERIENCE
RECORD FORMS
for
ORNAMENTAL HORTICULTURE
(REVISED)

1974

MASTER SET

Flower Shop Employee

Greenhouse Crops: Potted Plants

Greenhouse Crops: Cut Flowers

Outdoor Flower Crops

Landscape Maintenance and Establishment

Nursery Production: Field Grown Crops

Nursery Production: Field Grown Shrubs

Nursery Production: Container Grown Plants

Turfgrass Maintenance, Establishment, Production

Department of Agricultural Education
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Harrisburg,PA

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The project directors were R. F. Stinson, W. Williams, and S. M. Curtis, Department of Agricultural Education, The Pennsylvania State University.

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Foreword

These record forms have been developed for use with any production occupational or work experience record book for high school vocational agriculture programs.

Separate units have been developed for each of eleven areas in ornamental horticulture, so the student and teacher can select the appropriate one, or several, for the experiences planned by the student. The areas are indicated in the table of contents. Within each area, the five following record sheets are provided: (1) Approved Practices, (2) Goals, (3) Efficiency Factors, (4) Cost Accounting, or Employment Achievement, and (5) Analysis.

VT 102230

Contents

Flower Shop Employee . . . . A 1-10

Greenhouse Crops
  Potted Plants . . . . B 1-34
  Cut Flowers . . . . B 35-54

Outdoor Flower Crops . . . . C 1-16

Landscape Maintenance and Establishment. . . . . D 1-20

Nursery Production
  Field Grown Trees . . . . E 1-70
  Field Grown Shrubs, etc. . . . . E 71-138
  Container Grown Plants . . . . E 139-188

Turfgrass Maintenance, Establishment, Production . . . . . F 1-28

Supervised Occupational Experience Record Forms
for
Ornamental Horticulture

(REVISED)

1974

FLOWER SHOP EMPLOYEE - A 1-9

Department of Agricultural Education
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Pennsylvania Department of Education

Using The Forms

The five record sheets included in this unit are intended to be used with any production, occupational or work experience record book for high school vocational agriculture programs.

Approved Practices gives specific references to production or service practices that are generally accepted in industry as giving superior results if appropriately applied. A particular business firm might use variations of some of these practices because of unusual local conditions. Students carrying out production projects should find these references especially helpful. Students in agricultural production or services work experience will find them useful guides to what will be expected of them on the job.

Goals are stated in relation to efficiency. They are based on the comparisons of superior achievement with average achievement. The goals given are considered realistic in terms of production enterprises or work experience in production or services occupations. Successful businesses rank somewhere between "average" and "superior" in their goals.

The Efficiency Factor form provides a means for giving a numerical score on goal achievement. It is equally applicable to production enterprices, production occupations or service occupations. The scores are used as one base for comparisons in the judging of record books in regional and state record book contests.

Cost Accounting record forms serve as a guide for calculating the costs and profit in a production enterprise or a production experience. These figures, together with production figures are used in the analysis of the enterprise.

The Employment Achievement form is used in place of the Cost Accounting form when the experiences involve employment in a service occupation rather than production occupation.

The Analysis form should be marked at the beginning of the experience program with a "G" to indicate the goal that a student has set for himself. The same scales are marked with an "A" to indicate actual achievement at the end of the experience program. The analysis sheet provides for an evaluation of the approved practices used and their relationship to production or service and income.

Example of the Use of Efficiency Factors and Production Goals

The Pennsylvania Agricultural Production Program Record Book provides space for the student to list appropriate efficiency factors for each productive enterprise. In the example below, the figures in the column "Local Efficiency Standards" will have been obtained through group study by the students with the help of the teacher. An analysis of records of similar enterprises completed in previous years by students in the same school will also serve as a guide.

PRODUCTION GOALS: Potted Chrysanthemum ENTERPRISE

Efficiency Factor	Local Efficiency Standards		Student	Student
	Average	Superior	Goal	Achievement
Percent marketed	95%	100%	100%	97%
Number of 6" pots per 100 sq. ft. of bench space	75	100*	100	98
Number of blooms per 6" pot	18	24	24	22
Percent of pots in 16" to 18" height range including put marketed	90%	95%	95%	92%

* (optimum number)

Approved Practices

Flower Shop Employee

TASKS

	Ref. A	Ref. B
1. Retail Selling	p. 118 - 122	p. 171 - 178
2. Taking Orders	p. 118 - 122	p. 214 - 222
3. Shop Display	p. 129	p. 47 - 55
4. Floral Designing	p. 53 - 104	p. 271 - 371
5. Material Handling	p. 13 - 52	p. 223 - 230, 380 - 387
6. Delivering	p. 133	p. 231 - 237
7. Personal Appearance and Personality	p. 119	p. 127 - 128
8. Record Keeping	p. 125 - 126, 133	p. 238 - 270
9. Assist in Purchasing	p. 112 - 113	p. 132 - 137

A. RETAIL FLOWER SHOP OPERATION AND MANAGEMENT - P.S.U.

B. THE RETAIL FLOWER SHOP - PFAHL

Goals Stated in Relation to Efficiency

Flower Shop (Employee)

Efficiency Factors	Efficiency Standards	
	Average	Superior
1. Sales Concluded	95%	100%
2. Accuracy in Orders and Records	98%	100%
3. Customer Complaints	2%	1%
4. Accuracy Within Design Specifications	95%	100%
5. Maximum Utilization of Materials	95%	100%
6. Satisfactory Deliveries	95%	100%
7. Customer Satisfaction	Good	Excellent
8. Employer Satisfaction	Good	Excellent

Contest	Efficiency Factors	Min. Efficiency Level for Determining Score (average)	Max. Efficiency Level for Determining Score (superior)	Det
Flower Shop (Employer)	a. % Sales concluded	95%	100%	.2 poi
	b. % Accuracy in order and records	98%	100%	.5 poi
	c. % Complaints	2%	1%	.5 poi
	d. Accuracy within design specification	95%	100%	.2 poi
	e. % Maximum utilization of materials	95%	100%	2 poin
	f. % Satisfactory Deliveries	95%	100%	2 poin
	g. Customer satisfaction	Good	Excellent	
	h. Employer satisfaction	Good	Excellent	

fficiency Factors	Min. Efficiency Level for Determining Score (average)	Max. Efficiency Level for Determining Score (superior)	Method of Determining Score
. % Sales concluded	95%	100%	.2 points for every 1% over 95%
. % Accuracy in order and records	98%	100%	.5 points for every 1% over 98%
. % Complaints	2%	1%	.5 points for every 1% under 2%
. Accuracy within design specification	95%	100%	.2 points for every 1% over 95%
. % Maximum utilization of materials	95%	100%	2 points for every 1% over 95%
. % Satisfactory Deliveries	95%	100%	2 points for every 1% over 95%
. Customer satisfaction	Good	Excellent	-------
. Employer satisfaction	Good	Excellent	-------

Employment Achievement

Flower Shop Employee

1. Personal satisfaction (Do you enjoy the work?)

Exc. Good Poor

2. Monetary increases (after 3 to 6 months)

Exc. Good Poor

3. Fringe benefits (insurance, retirement, other)

Exc. Good Poor

4. Opportunity for advancement (in 1 to 5 years)

Exc. Good Poor

5. Variety of educational experience according to students occupational goals.

Exc. Good Poor

Analysis of Flower Shop Employee Experience

Name____________________ Date Started__________ Ended__________

School____________________ Total Hours____________________

County____________________ Income Per Year____________________

Employer____________________

Address____________________

____

	Poor	Average	Superior
1. Sales Concluded	90%	95%	100%
2. Accuracy in orders and records	96%	98%	100%
3. Complaints	4%	2%	1%
4. Accuracy within design specifications	90%	95%	100%
5. Maximum utilization of materials	90%	95%	100%
6. Satisfactory deliveries	90%	95%	100%

Poor Average Superior

7. Poor Good Excellent
Customer satisfaction

8. Poor Good Excellent
Employer satisfaction

Place a red "G" on each line scale at the goal set. Place a red "A" on each line scale at the efficiency achieved.

Practices and conditions which limited income:	Practices and conditions which contributed to superior efficiency:

Prepared by The Department of Agricultural Education, The Pennsylvania State University, in cooperation with the Pennsylvania Department of Education and Pennsylvania Vocational Agricultural Teachers.
1974

Supervised Occupational Experience Record Forms
for
Ornamental Horticulture
1974

GREENHOUSE CROPS - POTTED PLANTS - B 1-31

Chrysanthemum	B 2-8
Poinsettia	B 9-13
Easter Lily	B 15-19
Geranium	B 21-25
Bedding Plants	B 27-31

To be used with any production, occupational or work experience record book.

Department of Agricultural Education
The Pennsylvania State University
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Pennsylvania Department of Education

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Cost Accounting record forms serve as a guide for calculating the costs and profit in a production enterprise or a production experience. These figures, together with production figures are used in the analysis of the enterprise.

The Employment Achievement form is used in place of the Cost Accounting form when the experiences involve employment in a service occupation rather than production occupations.

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Example of the Use of Efficiency Factors and Production Goals

The Pennsylvania Agricultural Production Program Record Book provides space for the student to list appropriate efficiency factors for each productive enterprise. In the example below, the figures in the column "Local Efficiency Standards" will have been obtained through group study by the students with the help of the teacher. An analysis of records of similar enterprises completed in previous years by students in the same school will also serve as a guide.

PRODUCTION GOALS: Potted Chrysanthemum ENTERPRISE

Efficiency Factor	Local Efficiency Standards		Student Goal	Student Achievement
	Average	Superior		
Percent marketed	95%	100%	100%	97%
Number of 6" pots per 100 sq. ft. of bench space	75	100*	100	98
Number of blooms/ 6" pot	18	24	24	22
Percent of pots in 16" to 18" height range including pot marketed	90%	95%	95%	92%

*(Optimum number)

Approved Practices - Potted Chrysanthemum

PRACTICE	REFERENCE
1. Crop Planning, Selection, Rotation Schedule	P. 72-75
2. Soil Mixing and Steaming	P. 42, 56
3. Potting	P. 75
4. Photoperiod Control	P. 74
5. Watering	P. 77
6. Temperature Control	P. 76
7. Fertilizing	P. 43-51, 77-78
8. Pest Control	P. 52-65
9. Growth Regulator Application	P. 79-80
10. Pinching and Disbudding	P. 78-79
11. Marketing Preparation	P. 80

Reference: GREENHOUSE CROP PRODUCTION - A STUDENT HANDBOOK, PSU 1969

Goals Stated in Relation to Efficiency

Potted Chrysanthemums

Efficiency Factor	Efficiency Standard	
	Average	Superior
1. Percent Marketed	95%	100%
2. Number of 6" pots per 100 sq. ft. of bench space	75	100
3. Number of blooms per pot	18	24
4. Height at Market including Pot	85% (in 16"-18" height range)	95%
5. Marketed at Predetermined week	80%	95%
6. Intense foliage and flower color	Good	Excellent
7. Unblemished	90%	100%

Contest	Efficiency Factor	Min. Efficiency Level for Determining Score (average)	Max. Efficiency Level for Determining Score (superior)	D
Pot Mums	a. % Marketed	95%	100%	.2 points f over 95%
	b. No. of blooms per pot	18	24	.1 point fo 18 (average
	c. No. of 6" pots per 100 sq. ft. of bench space	75	100	.05 point f 75 up to 10
	d. % of pots in 16" to 18" height range at market including pot	90%	95%	.2 points f
	e. % Marketed at predetermined week	95%	100%	.2 points f over 95%

Efficiency Factor	Min. Efficiency Level for Determining Score (average)	Max. Efficiency Level for Determining Score (superior)	Method for Determing Score
% Marketed	95%	100%	.2 points for each 1% marketed over 95%
No. of blooms per pot	18	24	.1 point for each bloom over 18 (average)
No. of 6" pots per 100 sq. ft. of bench space	75	100	.05 point for each pot over 75 up to 100
% of pots in 16" to 18" height range at market including pot	90%	95%	.2 points for each 1% over 90%
% Marketed at pre-determined week	95%	100%	.2 points for each 1% marketed over 95%

Cost Accounting - Potted Chrysanthemums

1. Cost of rooted cuttings - varies from 9¢ to 18¢ each, depending upon variety. Use the actual price paid.

2. Container - 6" clay or plastic pots cost about 8¢ each: when actual price is not known, use this figure. Plastic drain pieces cost about 1¢ each.

3. Soil mix - a cubic yard of mixed, steamed soil to which fertilizer has been added costs about $15.00. One cubic yard (27 cubic feet) will fill 504,3/4 size 6-inch pots.

4. Overhead costs (depreciation, fuel, supplies, etc.) are about $1.40 per square foot of actual growing space per year.

5. Labor costs are about $1.60 per square foot of actual growing space per year.

6. The average marketing cost is 20% of the total of all other costs.

*Analysis of Potted Chrysanthemum Enterprise

Name ____________________ Date started ________ Ended ____________

School ____________________ Variety ____________________

County ____________________ Total receipts ____________________ x

Sq. Ft. of bench space ______ a Total expenses ____________________ y

Total Production ______ pots b Labor and management income ________ z
(x - y)

Production/100 sq. ft. ____ pots Income/100 sq. ft. bench space ________
(b ÷ a) x 100 (z ÷ a) x 100

Poor Average Superior

1. 90% ________ 95% ________ 100%
% Marketed

2. 50 ________ 75 ________ 100 ________ 200
6" pots/100 sq. ft.

3. 12 ________ 18 ________ 24
No. of Blooms/pot

4. 90% ________ 95% ________ 100%
% Marketed at Predetermined Week

5. 80% ________ 90% ________ 100%
% of pots in 16" to 18" height range

Place a red "G" on each line scale at goal set. Place a red "A" on each line scale at efficiency achieved.

Practices and conditions which limited the production and income
____
____
____

Practices and conditions which contributed to superior efficiency.
____
____
____

*Analysis based on 6" pots with 5 cutting/pot, pinched, disbudded.

Approved Practices - Poinsettias

		REFERENCE
1.	Crop Planning, Selection, Rotation	P. 84-91
2.	Soil Mixing and Steaming	P. 42-51
3.	Potting	P. 92-93
4.	Photoperiod Control	P. 91-92
5.	Watering	P. 93-94
6.	Temperature Control	P. 94-95
7.	Fertilizer	P. 94
8.	Pest Control	P. 52-65
9.	Pinching	P. 95-96
10.	Growth Regulator Application	P. 96-98
11.	Marketing Preparation	P. 98-99

Reference: GREENHOUSE CROP PRODUCTION - STUDENT HANDBOOK, PSU 1969
POINSETTIA MANUAL - PAUL ECKE

Goals Stated in Relation to Efficiency

Poinsettia

Efficiency Factors	Efficiency Standard	
	Average	Superior
1. % Marketed	95%	100%
2. Number of 6" pots per 100 sq. ft. of bench space	75	100
3.* a. Number of blooms per pot (3 cutting/pot)	3	
b. Number of blooms per pot (pinched-3 cutting/pot)	6	7
c. Number of blooms per pot (self branching cultivar)	6	8
4. % Marketed at predetermined week	85%	95%
5. Height of marketed plant including pot	85%	95%
	(in 16"-18" height range)	
6. Intense foliage and flower color	Good	Excellent
7. Unblemished	90%	100%
8. Uniform growth	Good	Excellent

*Select 3a, or 3b, or 3c.

Contest	Efficiency Factor	Min. Efficiency Level for Determining Score	Max. Efficiency Level for Determining Score	M Dete
Poinsettias	a. % of crop marketed	95%	100%	.2 p over
	b. No. of 6" pots per 100 sq. ft. of bench space	75	100	.05 ove
	c.* No. of blooms per pot (3 cutting/pot)	3		.1 flo eff
	No. of blooms per pot (pinched-3 cuttings/pot)	6	7	.1 flo eff
	No. of blooms per pot (self branching cultivar-3 cuttings/pot)	6	8	.1 flo eff
	d. % of pots in 16"-20" height range at marketing including pot	90%	95%	.1 1%
	e. % marketed at predetermined week	95%	100%	.2 1%

*Select one.

ficiency Factor	Min. Efficiency Level for Determining Score	Max. Efficiency Level for Determining Score	Method for Determining Score
% of crop marketed	95%	100%	.2 points for every 1% over 95%
No. of 6" pots per 100 sq. ft. of bench space	75	100	.05 point for each pot over 75 up to 100
* No. of blooms per pot (3 cutting/pot)	3		.1 point for each flower over minimum efficiency factor
No. of blooms per pot (pinched-3 cuttings/pot)	6	7	.1 point for each flower over minimum efficiency factor
No. of blooms per pot (self branching cultivar-3 cuttings/pot)	6	8	.1 point for each flower over minimum efficiency factor
% of pots in 16"-20" height range at marketing including pot	90%	95%	.1 point for every 1% over 90%
% marketed at predetermined week	95%	100%	.2 points for each 1% marketed over 95%

Cost Accounting - Poinsettia

1. Cost of rooted cuttings or plants - 25¢ each, depending upon variety. Use the actual price paid.

2. Container - 6" clay or plastic pots cost about 8¢ each: when actual price is not known, use this figure. Plastic drain pieces cost about 1¢ each.

3. Soil mix - A cubic yard of mixed steamed soil to which fertilizer has been added costs about $14.00. One cubic yard (27 cubic feet) will fill 504, 3/4 size 6-inch pots.

4. Overhead costs (depreciation, fuel, supplies, etc.) are about $1.40/sq. ft. of actual growing space per year.

5. Labor costs are about $1.60/sq. ft. of actual growing space/yr.

6. The wholesale marketing cost is close to 20% of total of all other costs.

Analysis of Potted Poinsettia

Name ____________________ Date Started _____ Ended _______

School ____________________ Variety ________________

County ____________________ Total receipts ____________ x

Sq. Ft. of Bench Space ________ a Total expenses ____________ y

TOTAL Production ________ pots b Labor & Management income _____ z
(x - y)

Production/100 sq. ft. _____ pots Income/100 sq. ft. bench space ___
(b ÷ a) (z ÷ a) x 100

	Poor	Average	Superior
1.	90%	95%	100%
		% Marketed	
2.	75	100	150
		6" pots/100 sq. ft.	
3.	2	3	4
		blooms/pot (three cutting/pot)	
4.	6	7	8
		blooms/pot (pinched-3 cuttings/pot)	
5.	6	7	8
		blooms/pot (self branching cv.-3 cuttings/pot)	
6.	85%	95%	100%
		% marketed in predetermined week	
7.	80%	90%	100%
		% of crop in the 16"-20" height range	

Place a red "G" on each line scale at goal set. Place a red "A" on each line scale at efficiency achieved.

Practices & conditions which limited the production & income	Practices & conditions which contributed to superior efficiency
____________________	____________________
____________________	____________________
____________________	____________________

Approved Practices - Easter Lily

		REFERENCE
1.	Crop Planning, Selection-Rotation Schedule	P. 101-104
2.	Soil Mixing and Steaming	P. 42-51, 104
3.	Potting	P. 104
4.	Timing and Temperature Control	P. 106-108
5.	Photoperiod Control	P. 106-108, 110
6.	Watering	P. 105-106
7.	Fertilizing	P. 105
8.	Pest Control	P. 52-65, 110-111
9.	Market Preparation	P. 111

Reference: GREENHOUSE CROP PRODUCTION - A STUDENT HANDBOOK, PSU 1969

Goals Stated in Terms of Efficiency

Easter Lily

Efficiency Factors	Efficiency Standards Average	 Superior
1. Percent Marketed	95%	100%
2. Number of 6" pot/100 sq. ft. of bench space	100	110
3. Number of blooms per pot (from 8-9 size bulbs)	4	5
4. Height (pot included)	16"	24"
5. Marketed at predetermined week, 1 bloom open	95%	100%
6. Intense foliage, color, and large bloom	Good	Excellent
7. Unblemished	90%	100%

Contest	Efficiency Factor	Min. Efficiency Level for Determining Score (average)	Max. Efficiency Level for Determining Score (superior)	De
Easter Lily	a. % of crop marketed	95%	100%	.2 1%
	b. No. of blooms per pot	4	6	.3 bl
	c. No. of 6" pots per 100 sq. ft. of bench space	100	110	.0 po
	d. % of pots in 16 to 24 inch height range at market including pot	90%	95%	.1 ov
	e. Percent marketed at predetermined week	95%	100%	.2 1%

Efficiency Factor	Min. Efficiency Level for Determining Score (average)	Max. Efficiency Level for Determining Score (superior)	Method for Determining Score
a. % of crop marketed	95%	100%	.2 points for each 1% marketed over 95%
b. No. of blooms per pot	4	6	.3 points for each bloom over 4
c. No. of 6" pots per 100 sq. ft. of bench space	100	110	.05 point for each pot over 100
d. % of pots in 16 to 24 inch height range at market including pot	90%	95%	.1 point for each 1% over 90%
e. Percent marketed at predetermined week	95%	100%	.2 points for each 1% marketed over 95%

Cost Accounting - Easter Lily

1. Cost of bulbs - 35¢ to 45¢ each, depending upon variety. Use the actual price paid.

2. Container - 6" clay or plastic pots cost about 8¢ each: when actual price is not known use this figure. Plastic drain pieces cost about 1¢ each.

3. Soil mix - a cubic yard of mixed steamed soil to which fertilizer has been added costs about $14.00. One cubic yard (27 cubic feet) will fill 504, 3/4 size 6-inch pots.

4. Overhead costs (depreciation, fuel, supplies, etc.) are about $1.40 sq. ft. of actual growing space/year.

5. Labor costs are about $1.60 per sq. ft. of actual growing space/year.

6. The wholesale marketing cost is close to 20% of the total of all other costs.

Analysis of Easter Lily Enterprise

Name ____________________

Date started __________ Ended __________

School ____________________

Variety ____________________

County ____________________

Total receipts ____________________ x

Sq. ft. of Bench Space __________ a

Total expenses ____________________ y

Total Production __________ b

Labor and management income ______ z
(x - y) × 100

Production/100 sq. ft. __________
(b ÷ a) × 100

Income/100 sq. ft. of Bench Space
(z ÷ a) __________

	Poor	Average	Superior
1.	90%	95%	100%
		% Marketed	
2.	90	100	110
		Pots/100 sq. ft.	
3.	2	3	5
		Number blooms/pot (7-8" bulb)	
4.	12"	16"	24"
		Height at market time	
5.	90%	95%	100%
		% Marketed at predetermined week, one open bloom	

Place a red "G" on each line scale at goal set. Place a red "A" on each line scale at efficiency achieved.

Practices & conditions which limited the production & income	Practices & conditions which contributed to superior efficiency

Approved Practices - Geranium, 4"

PRACTICE	REFERENCE
1. Crop Planning, Selection, Rotation Schedule	P. 331-335
2. Soil Mixing and Steaming	P. 93-119, 332
3. Potting	P. 331-335
4. Pinching	P. 331-335
5. Watering	P. 331-335
6. Temperature Control	P. 331-335
7. Fertilizing	P. 331-335
8. Pest Control	P. 335-336, 120-128
9. Marketing Preparation	-- -- --

References: BALL RED BOOK - 12th EDITION, PRODUCED BY GEORGE J. BALL, INC.

GERANIUMS - PSU

Goals Stated in Terms of Efficiency

Geraniums, 4"

Efficiency Factors	Efficiency Standards	
	Average	Superior
1. Percent Marketed	95%	100%
2. Number of pots per 100 sq. ft.	300	330
3. Number of flowers per pot	1	3
4. Height, including pot	8"	10"
5. Marketed at a predetermined week	85%	95%
6. Intense foliage color and flower color	Good	Excellent
7. Unblemished	90%	95%

Contest	Efficiency Factor	Min. Efficiency Level for Determining Score (average)	Max. Efficiency Level for Determining Score (superior)	De
Geraniums	a. % marketed	95%	100%	.1 1%
	b. No. of 4" pots per 100 sq. ft. of bench space	300	330	.0 po
	c. No. of blooms per pot at market stage	2	4	.0 bl
	d. Height - including pot	8"	10"	.2 ov 10
	e. % marketed at predetermined week	85%	95%	.2 1%
	f. Foliage & flower color unblemished	90%	95%	.1 ov

Efficiency Factor	Min. Efficiency Level for Determining Score (average)	Max. Efficiency Level for Determining Score (superior)	Method for Determining Score
a. % marketed	95%	100%	.1 point for each 1% over 95%
b. No. of 4" pots per 100 sq. ft. of bench space	300	330	.05 point for each pot over 300
c. No. of blooms per pot at market stage	2	4	.05 points for each bloom over 2
d. Height - including pot	8"	10"	.2 point for each ½" over 8" average to 10"
e. % marketed at predetermined week	85%	95%	.2 points for each 1% marketed over 85%
f. Foliage & flower color unblemished	90%	95%	.1 point for each 1% over 90%

Cost Accounting - Geranium, 4"

1. Cost of rooted cuttings - varies from .10 to .20 each, depending upon variety. Use the actual price paid.

2. Container - 4" clay or plastic pots cost about 4¢ each: when actual price is not known, use this figure. Plastic drain pieces cost about 1¢ each.

3. Soil mix - a cubic yard of mixed, steamed soil to which fertilizer has been added. Cost about $14.00 one cubic yard (27 cubic feet) will fill 3916, 3/4 size 4-inch pots.

4. Overhead costs (depreciation, fuel, supplies, etc.) are about $1.40/sq. ft. of actual growing space/year.

5. Labor costs are about $1.60/sq. ft. of actual growing space/year.

6. The wholesale marketing cost is close to 20% of the total of all other costs.

Analysis of Geranium Enterprise

Name ____________________

Date started ________ Ended ________

School ____________________

Variety ____________________

County ____________________

Total receipts ____________________ x

Sq. ft. Bench ____________________ a

Total expenses ____________________ y

Total Production ____________ Pots b

Labor management income ________ z
(x - y)

Production/100 sq. ft. ____________
(b ÷ a) × 100

Income/100 sq. ft. of bench space
(z ÷ a) × 100 ________

	Poor	Average	Superior	
1.	90%	95%	100%	% of plants marketed
2.	270	300	330	Pots/100 sq. ft. bench space
3.	1	2	3	Blooms/pot
4.	6	8	10	Height of plant at market time
5.	80	85	95	Marketed at predetermined week
6.	Poor	Good	Superior	Intensity of foliage & flower color
7.	Poor	Good	Excellent	Unblemished

Place a red "G" on each line scale at goal set. Place a red "A" on each line scale at efficiency achieved.

Practices & conditions which limited the production & income	Practices & conditions which contributed to superior efficiency
____________________	____________________
____________________	____________________
____________________	____________________

Approved Practices - Bedding Plants.

PRACTICE	REFERENCE
1. Crop Planning, Selection, Rotation Schedule	P. 115-121
2. Soil Mixing and Steaming	P. 42-57, 118
3. Seed Sowing	P. 120-121
4. Planting, Transplanting or Direct Seeding	P. 122-128
5. Watering	P. 121, 128-130
6. Temperature Control	P. 122, 128-130
7. Fertilizing	P. 125, 128-130
8. Pest Control	P. 58-61, 130
9. Growth Regulator Application	P. 128-129
10. Market Preparation	P. 130-131

References: GREENHOUSE CROP PRODUCTION - A STUDENT HANDBOOK, PSU 1969
BEDDING PLANTS - PSU

Goals Stated in Relation to Efficiency

Bedding Plants

Efficiency Factors	Efficiency Standards Average	Efficiency Standards Superior
1. Percent Marketed	95%	100%
2. No. of packs/100 sq. ft.	300	320
3. Percent of plants that survive transplant	90%	95%
4. Percent Marketed at predetermined week	75%	95%
5. Percent within 6-7 inch range	80%	90%
6. Intense foliage color	Good	Excellent
7. Unblemished	90%	95%

Contest	Efficiency Factor	Min. Efficiency Level for Determining Score (average)	Max. Efficiency Level for Determining Score (superior)	De
Bedding Plants	a. % marketed	95%	100%	.2 1%
	b. No. of packs/100 sq. ft.	300	320	.0 pa
	c. % of plants that survived transplanting	90%	95%	.2 1%
	d. % marketed at a predetermined week	75%	95%	.0 1%
	e. % of plants within 6-7 inch range	80%	90%	.1 2%

fficiency Factor	Min. Efficiency Level for Determining Score (average)	Max. Efficiency Level for Determining Score (superior)	Method for Determining Score
% marketed	95%	100%	.2 points for every 1% above 95%
No. of packs/100 sq. ft.	300	320	.05 point for every pack above 300
% of plants that survived transplanting	90%	95%	.2 points for every 1% over 90%
% marketed at a predetermined week	75%	95%	.05 point for every 1% above 75%
% of plants within 6-7 inch range	80%	90%	.1 point for every 2% point above 80%

Cost Accounting - Bedding Plants

1. Cost of seeds - varies with plant material and variety, use actual cost.
2. Containers - "market paks" costs about 6 cents; when actual cost is not known, use this figure.
3. Soil mix - a cubic yard of mixed, steamed soil to which fertilizer has been added costs about $14.00. One cubic yard (27 cubic feet) will fill 462 "market paks" (#42 market paks) (5 1/2 x 7 3/4 x 2 3/8).
4. Overhead costs (depreciation, fuel, supplies, etc.) are about $1.40/sq. ft. of actual growing space/year.
5. Labor costs are about $1.60/sq. ft. of actual growing space/year.
6. The wholesale marketing cost is close to 20% of the total of all other costs.

Analysis of Bedding Plant Enterprise

Name ______________________ Date Started __________ Ended __________

School ______________________ Variety ______________________

County ______________________ Total Receipts ______________________ x

Square Feet Bench ______________ a Total Expenses ______________________ y

Total Production ___mktg. packs___ b Labor Management Income ______________
(x - y)

Packs/100 Sq. Ft. ______________ c Income/100 Sq. Ft. of
(b ÷ a) x 100
Bench Space ______________________
(z ÷ a) x 100

	Poor	Average	Superior	
1.	90	95	100	Percent Marketed
2.	230	300	320	Packs/100 Square Feet
3.	5 (11)	6 (12)	7 (13)	Live Plants/Pack
4.	65	75	95	Percent Marketed at Pre-determined Week
5.	70	80	90	Percent Plants in 6-7" Range at Market Time
6.	Poor		Excellent	Intense Foliage
7.	85	90	95	Percent Unblemished

Place a red "G" on each line scale at goal set. Place a red "A" on each line scale at efficiency achieved.

Practices and conditions which limited the production and income:	Practices and conditions which contributed to superior efficiency:

Prepared by The Department of Agricultural Education, The Pennsylvania State University, in cooperation with the Pennsylvania Department of Education and Pennsylvania Vocational Agriculture Teachers. 1974

Supervised Occupational Experience Record Forms
for
Ornamental Horticulture
(Revised)
1974

GREENHOUSE CROPS - CUT FLOWERS	B 35-54
Chrysanthemum	B 38-42
Carnation	B 43-47
Snapdragon	B 48-52

To be used with any production, occupational, or work experience record book.

Department of Agricultural Education
The Pennsylvania State University
in cooperation with
Bureau of Vocational Education
Pennsylvania Department of Education

Using The Forms

The five record sheets included in this unit are intended to be used with any production, occupational or work experience record book for high school vocational agriculture programs.

Approved Practices gives specific references to production or service practices that are generally accepted in industry as giving superior results if appropriately applied. A particular business firm might use variations of some of these practices because of unusual local conditions. Students carrying out production projects should find these references especially helpful. Students in agricultural production or services work experience will find them useful guides to what will be expected to them on the job.

Goals are stated in relation to efficiency. They are drawn up on the basis of comparisons of superior achievement with average achievement. The goals given are considered realistic in terms of production enterprises or work experience in production or services occupations. Successful businesses rank somewhere between "average" and "superior" in their goals.

The Efficiency Factor form provides a means for giving a numerical score on goal achievement. It is equally applicable to production enterprises, production occupations or service occupations. The scores are used as one base for comparisons in the judging of record books in regional and state record book contests.

Cost Accounting record forms serve as a guide for calculating the costs and profit in a production enterprise or a production experience. These figures, together with production figures are used in the analysis of the enterprise.

The Employment Achievement form is used in place of the Cost Accounting form when the experiences involve employment in a service occupation rather than production occupation.

The Analysis form should be marked at the beginning of the experience program with a "G" to indicate the goal that a student has set for himself. The same scales are marked with an "A" to indicate actual achievement at the end of the experience program. The analysis sheet provides for an evaluation of the approved practices used and their relationship to production or service and income.

Example of the Use of Efficiency Factors and Production Goals

The Pennsylvania Agricultural Production Program Record Book provides space for the student to list appropriate efficiency factors for each productive enterprise. In the example below, the figures in the column "Local Efficiency Standards" will have been obtained through group study by the students with the help of the teacher. An analysis of records of similar enterprises completed in previous years by students in the same school will also serve as a guide.

PRODUCTION GOALS: Potted Chrysanthemum ENTERPRISE

Efficiency Factor	Local Efficiency Standards		Student Goal	Student Achievement
	Average	Superior		
Percent marketed	95%	100%	100%	97%
Number of 6" pots per 100 sq. ft. of bench space	75	100*	100	98
Number of blooms/6" pot	18	24	24	22
Percent of pots in 16" to 18" height range including pot marketed	90%	95%	95%	92%

* (Optimum number)

Approved Practices - Cut Chrysanthemums

	PRACTICES	REFERENCE
1.	Crop Planning, Selection, Rotation Schedule	p. 152-154
2.	Soil Bench Preparation	p. 33, 34, 153, 154
3.	Planting	p. 155-156
4.	Pinching and Disbudding and Thinning	p. 158
5.	Supporting	p. 166
6.	Photoperiod Control	p. 153-154
7.	Carbon Dioxide	p. 158
8.	Watering	p. 156
9.	Temperature Control	p. 157
10.	Pest Control	p. 52-65
11.	Fertilizing	p. 157
12.	Harvesting and Market Preparation	p. 158-159

Reference: GREENHOUSE CROP PRODUCTION - A STUDENT HANDBOOK, PSU, 1969

Goals Stated in Relation to Efficiency

Cut Chrysanthemums

Efficiency Factors	Efficiency Standards Average	 Superior
1. % Marketed	95%	100%
2. Stems per 100 sq. ft. of bench space	a. Single Stem 475 b. Pinched 800	550 900
3. Stem Length	Single - 36" Pinched - 30"	38" 32"
4. Marketed at predetermined date	95%	100%
5. Intense foliage color	Good	Excellent
6. Unblemished	90%	100%
7. Meeting Society of American Florists Standards	20% purple 45% blue 25% red 10% green	25% purple 50% blue 25% red

Contest	Efficiency Factor	Min. efficiency level for determining Score (average)	Max. efficiency level for determining Score (superior)	
Cut Chrysanthemum	a. % Marketed	95%	100%	.2
	b.(1). Stems per 100 sq. ft. of bench space	Single - 475	550	.0 c
	(2). Stems per 100 sq. ft. of bench space	Pinched - 800	900	.0 c
	c. Stem length	Single - 36"	38"	.5
		Pinched - 30"	32"	.5
	d. Marketed at predetermined week	75%	95%	.0 n c
	e. % of crop meeting 40% blue grade of the Society of American Florists Standards	45%	50%	. c

ncy Factor	Min. efficiency level for determining Score (average)	Max. efficiency level for determining Score (superior)	Method for determining score
arketed	95%	100%	.2 points for each 1% over 95%
Stems per 100 q. ft. of bench pace	Single - 475	550	.026 point for each stem over 475 up to 550
Stems per 100 q. ft. of bench pace	Pinched - 800	900	.02 point for each stem over 800 up to 900.
m length	Single - 36"	38"	.5 point for each 1" over 36
	Pinched - 30"	32"	.5 point for each 1" over 30
keted at pre- ermined week	75%	95%	.05 for each 1% over 75% market at predetermined date max.
f crop meeting blue grade of Society of rican Florists ndards	45%	50%	.1 point for each 5% points over 45%

Cost Accounting - Cut Chrysanthemums

1. Cost of Rooted Cuttings - Varies from 8¢ to 15¢ depending upon variety. Use the actual price paid.

2. Soil Mix - A cubic yard of steamed soil to which fertilizer has been added costs about $14.00.

3. Overhead Costs (Depreciation, Fuel, Supplies, Etc.) - Are about $1.40/sq. ft. of actual growing space/year.

4. Labor Costs are about $1.60/sq. ft. of actual growing space/year.

5. Wholesale marketing cost is close to 20% of the total of all other costs.

Analysis of Cut Chrysanthemum Crop

Name ______________________ Date Started __________ Ended __________

School ______________________ Variety ______________________

County ______________________ Total Receipts ______________________ x

(including ending inventory

Number of sq. ft. Bench ______ a Total Expenses ______________________ y

Total number blooms ______ b (including beginning inventory)

or Total number of stems ______ b Labor Management Income ______________ z

(x - y = z)

Blooms/100 sq. ft. __________ Income/100 sq. ft. of bench space ______

(b ÷ a) x 100 (z ÷) x 100

	Poor	Average	Superior	
1.	90	95	100	% of Crop Marketed
2.	475	512	550	Single Stem Crops, Stems/100 sq. ft.
3.	700	800	900	Spray Pinched Crops, Stems/100 sq. ft.
4.	34"	36"	38"	Single Stem Crops, Stem Length
5.	28"	30"	32"	Pinched Crop, Stem Length
6.	75	95	100	% of crop meeting "Blue Grade" standard of S. A. F.

Place a red "G" on each line scale at goal set. Place a red "A" on each line scale at efficiency achieved.

Practices and conditions which limited the production and income:	Practices and conditions which contributed to superior efficiency:
______________________	______________________
______________________	______________________
______________________	______________________

Approved Practices - Carnations

PRACTICES	REFERENCES
1. Crop Planting, Selection, Rotation Schedule	P. 162-163, 165
2. Soil Mixing and Steaming	P. 42-51, 153, 163
3. Light and Photoperiod Control	P. 167-169
4. Carbon Dioxide Control	P. 169
5. Watering	P. 156
6. Temperature Control	P. 167
7. Fertilizing	P. 163-166
8. Pest Control	P. 52-65, 171-172
9. Supporting	P. 166
10. Pinching - Disbudding	P. 169-171
11. Banding of Splits	-- -- --
12. Market Preparation	P. 172-174

Reference: GREENHOUSE CROP PRODUCTION - STUDENT HANDBOOK, PSU 1969

Goals Stated in
Relation to Efficiency

Carnations		Efficiency Standards	
Efficiency Factors		Average	Superior
1. % Marketed		95%	100%
2. No. of plants/100 sq. ft.		280	300
3. No. of stems/sq. ft./year		25	27
4. Quality distribution	Blue	25%	30%
	Red	50%	55%
	Green	25%	15%
5. Intense flower color		Good	Excellent

Contest	Efficiency Factors	Min. efficiency level for determining Score (average)	Max. efficiency level for determi Score (superior
Carnations	a. % Marketed	95%	100%
	b. No. of plants/100 sq. ft. bench space	280	300
	c. No. of stems/sq. ft./year	25	27
	d. Quality distribution	25% Blue 50% Red 25% Green	30% Blue 55% Red 15% Green

ency Factors	Min. efficiency level for determining Score (average)	Max. efficiency level for determining Score (superior)	Method for determining score
arketed	95%	100%	.2 points for each 1% over 95% marketed
. of plants/100 sq. ft. nch space	280	300	.05 point for each stem over 300 max.
of stems/sq. ft./year	25	27	.1 point for each stem over 16
lity distribution	25% Blue 50% Red 25% Green	30% Blue 55% Red 15% Green	.2 point for each 1% over 50% in Red

Cost Accounting - Carnations

1. Cost of Rooted Cuttings - varies from 8¢ to 15¢ each depending on variety. Use the actual price paid.

2. Soil mix - a cubic yard of mixed, steamed soil to which fertilizer has been added costs about $14.00.

3. Overhead costs (depreciation, fuel, supplies, etc.) are about $1.40/sq. ft. of actual growing space/year.

4. Labor costs are about $1.60/sq. ft. of actual growing space/year.

5. The wholesale marketing cost is close to 20% of the total of all other costs.

Analysis for Carnations

Name ______________ Date Started ________ Ended ________

School ______________ Variety ______________

County ______________ Total Receipts ______________ x
(including ending inventory)

Sq. ft. of bench space ______ a Total Expenses ______________ y
(including beginning inventory)

Number of stems ______ b Labor Management Income ______________ z
(x - y)

Stems/sq. ft. ______ c Income/100 sq. ft. of bench space ______
(b ÷ a) x 100 (z ÷ a) x 100

	Poor	Average	Superior
1.	90	95	100
		% Marketed	
2.	260	280	300
		Plants/100 sq. ft.	
3.	22	25	27
		Stems/sq. ft.	
4.	45	50	55
		% Quality distribution by color Red	
5.	Poor	Good	Excellent
		Intensity of flower color	

Place a red "G" on each line scale at goal set. Place a red "A" on each line scale at efficiency achieved.

Practices and conditions which limited the production and income:	Practices and conditions which contributed to superior efficiency:
______________	______________
______________	______________
______________	______________

Approved Practices - Snapdragons, Single Stem

PRACTICE	REFERENCE
1. Crop Planning, Selection, Rotation Schedule	P. 175-178
2. Soil Mixing and Steaming	P. 42-51, 178-179
3. Watering	P. 179
4. Temperature Control	P. 179
5. Fertilization	P. 179
6. Pest Control	P. 42-65, 180
7. Carbon Dioxide	P. 180
8. Response to light intensity and Duration	P. 176-177
9. Marketing Preparation	P. 175-176, 180-182

Reference: GREENHOUSE CROP PRODUCTION - A STUDENT HANDBOOK, PSU 1969
SNAPDRAGONS - CORNELL UNIV.

Goals Stated in Relation to Efficiency

Snapdragons, single stem

Efficiency Factors		Efficiency Standards	
		Average	Superior
1. Percent Marketed		95%	100%
2. No. of plants per 100 sq. ft. of bench		550	600
3. No. of flowers per 100 sq. ft.		550	600
4. Quality distribution	Blue	20%	25%
	Red	50%	55%
	Green	20%	10%
5. Percent marketed at a predetermined week		75%	95%
6. Intense foliage and flower color		Good	Excellent
7. Unblemished		90%	100%

Contest	Efficiency Factor	Min. efficiency level for determining Score (average)	Max. efficiency level for determinin Score (superior)
Snapdragons Single stem	a. % Marketed	95%	100%
	b. No. of plants per 100 sq. ft. of bench space	550	600
	c. No. of flowers per 100 sq. ft.	550	600
	d. % Marketed at predetermined week	75%	95%
	e. Quality distribution	20% Blue 50% Red 20% Green	25% 55% 10%

iciency Factor	Min. efficiency level for determining Score (average)	Max. efficiency level for determining Score (superior)	Method of determining score
% Marketed	95%	100%	.2 points for each 1% marketed over 95%
No. of plants per 100 sq. ft. of bench space	550	600	.2 point for each 10 over 550
No. of flowers per 100 sq. ft.	550	600	.2 point for each 10 flowers over 550
% Marketed at predetermined week	75%	95%	.25 point for each % marketed over 75%
Quality distribution	20% Blue 50% Red 20% Green	25% 55% 10%	.2 point for each 1% over 50% in Red

Cost Accounting - Snapdragon, Single Stem

1. Cost of seed, about $4.00 to $5.00/trade packet of seed (2,000 seeds). Varies with variety, use the actual price paid.
2. Soil mix - a cubic yard of mixed, steamed soil to which fertilizer has been added costs about $14.00.
3. Overhead costs (depreciation, fuel, supplies, etc.) are about $1.40/ sq. ft. of actual growing space/year.
4. Labor costs are about $1.60/sq. ft. of actual growing space/year.
5. The marketing cost is close to 20% of the total of all other costs.

Analysis of a Snapdragon Enterprise

Name ____________________ Date Started __________ Ended __________

School ____________________ Variety __________ Week group _____

County ____________________ Total receipts ____________________ x

Sq. ft. bench space __________ a Total expenses ____________________ y

Total blooms __________ b Labor Management Income ____________________ z

Blooms/100 sq. ft. __________ Income/100 sq. ft. of bench space _____
(b ÷ a) x 100 (z ÷ a) x 100

	Poor	Average	Superior
1.	90%	95%	100%
		% Marketed	
2.	500	550	600
		Plants/100 sq. ft.	
3.	500	550	600
		Flowers (blooms)/sq. ft.	
4.	45%	50%	55%
		% Snapdragons Grading "Red"	
5.	65%	75%	95%
		% Marketed at Predetermined Week	

Place a red "G" on each line scale at goal set. Place a red "A" on each line scale at efficiency achieved.

Practices and conditions which limited the production and income:	Practices and conditions which contributed to superior efficiency:
____________________	____________________
____________________	____________________
____________________	____________________

Prepared by The Department of Agricultural Education, The Pennsylvania State University, in cooperation with the Pennsylvania Department of Education, and Pennsylvania Vocational Agriculture Teachers 1974.

Supervised Occupational Experience Record Forms
for
Ornamental Horticulture
(Revised)
1974

OUTDOOR FLOWER CROPS C 1-16

Chrysanthemum Plants	C 2- 7
Gladiolus	C 8-14

To be used with any production, occupational or work experience record book.

Department of Agricultural Education
The Pennsylvania State University
in cooperation with
Bureau of Vocational Education
Pennsylvania Department of Education

Using the Forms

The five record sheets included in this unit are intended to be used with any production, occupational or work experience record book for high school vocational agriculture programs.

Approved Practices gives specific references to production or service practices that are generally accepted in industry as giving superior results if appropriately applied. A particular business firm might use variations of some of these practices because of unusual local conditions. Students carrying out production projects should find these references especially helpful. Students in agricultural production or services work experience will find them useful guides to what will be expected of them on the job.

Goals are stated in relation to efficiency. They are drawn up on the basis of comparisons of superior achievement with average achievement. The goals given are considered realistic in terms of production enterprises or work experience in production or services occupations. Successful businesses rank somewhere between "average" and "superior" in their goals.

The Efficiency Factor form provides a means for giving a numerical score on goal achievement. It is equally applicable to production enterprises, production occupations or service occupations. The scores are used as one base for comparisons in the judging of record books in regional and state record book contests.

Cost Accounting record forms serve as a guide for calculating the costs and profit in a production enterprise or a production experience. These figures, together with production figures are used in the analysis of the enterprise.

The Employment Achievement form is used in place of the Cost Accounting form when the experiences involve employment in a service occupation rather than production.

The Analysis form should be marked at the beginning of the experience program with a "G" to indicate the goal that a student has set for himself. The same scales are marked with an "A" to indicate actual achievement at the end of the experience program. The analysis sheet provides for an evaluation of the practices used and their relationship to production or service and income.

Example of the Use of
Efficiency Factors and Production Goals

The Pennsylvania Agricultural Production Program Record Book provides space for the student to list appropriate efficiency factors for each productive enterprise. In the example below, the figures in the column "Local Efficiency Standards" will have been obtained through group study by the students with the help of the teacher. An analysis of records of similar enterprises completed in previous years by students in the same school will also serve as a guide.

PRODUCTION GOALS: Potted Chrysanthemum ENTERPRISE

Efficiency Factor	Local Efficiency Standards Average	Local Efficiency Standards Superior	Student Goal	Student Achievement
Percent marketed	95%	100%	100%	97%
Number of 6" pots per 100 sq. ft. of bench space	75	100*	100	98
Number of blooms/6" pot	18	24	24	22
Percent of pots in 16" to 18" height range including pot marketed	90%	95%	95%	92%

---

* Optimum number

Approved Practices - Outdoor Chrysanthemum Plants

Practices	References
1. Crop planning, selection, rotation schedule	P. 286-290
2. Soil mixing and steaming	P. 286-290
3. Watering	P. 286-290
4. Fertilizing	P. 286-290
5. Pinching	P. 286-290
6. Pest control	P. 286-290
7. Marketing preparation	P. 286-290

Reference - BALL RED BOOK 12th EDITION, 1972

Goals Stated in Relation to Efficiency

Outdoor Chrysanthemum Plants

	Efficiency Standards	
Efficiency Factors	Average	Superior
1. Percent marketed	95%	100%
2. No. of plants on 100 sq. ft.	33	40
3. Height and diameter of plants with appropriate container	18"	20"
4. Percent marketed at pre-determined week	75	95
5. Intense foliage and flower color	Good	Excellent
6. Percent unblemished	90	95

Contest	Efficiency Factor	Min. Efficiency Level for Determining Score (average)	Max. Efficiency Level for Determin Score (superior)
Outdoor Chrysanthemum Plants	a. % Marketed	95%	100%
	b. No. of plants per 100	33	0
	c. Height and diameter of plants with appropriate container	18"	20"
	d. % Marketed at a predetermined week	75%	95%

Efficiency Factor	Min. Efficiency Level for Determining Score (average)	Max. Efficiency Level for Determining Score (superior)	Method for Determining Score
a. % Marketed	95%	100%	.2 points for each 1% over 95%
b. No. of plants per 100	33	0	.2 point for each plant over 33 max. 1.4 pts.
c. Height and diameter of plants with appropriate container	18"	20"	.5 points for each one inch over 18"
d. % Marketed at a predetermined week	75%	95%	.1 point for each 1% over 75%

Cost Accounting - Outdoor Mums Chrysanthemum Plants

(to be grown in the field and lifted and placed in pots)

(cost per 100 sq. ft.)

1. Cost of rooted cuttings - varies from 9¢ to 18¢ each, depending upon variety. Use the actual price paid per 100 sq. ft.
2. Cost of containers varies from 10¢ to 20¢ each, use actual price paid.
3. Cost of land/100 sq. ft.
4. Cost of labor/100 sq. ft.
5. Overhead (supplies, equipment, etc.)/100 sq. ft.
6. The marketing cost is close to 20% of the total of all other costs.

Analysis of Outdoor Chrysanthemum Plants

Name ______________________________

School ______________________________

County ______________________________

Sq. ft. of field used ______________ a

No. of plants ______________ b

No. of plants/100 sq. ft. ______________ c
(b ÷ a) x 1000

Date started __________ Ended __________

Variety ______________________________

Total receipts ______________ x

Total expenses ______________ y

Labor & management income ______ z
(x - y)

Income per 100 sq. ft. ______________
(z ÷ a) x 1000

	Poor	Average	Superior	
1.	90%	95%	100%	% marketed plants
2.	28	33	40	plants/100 sq. ft.
3.	12"	16"-18"	20"	height & diameter of plants
4.	60%	75%	95%	% marketed predetermined week
5.	poor	good	excellent	Intense foliage & flower color
6.	85%	90%	95%	% unblemished

Place a red "G" on each line scale at goal set. Place a red "A" on each line scale at efficiency achieved.

Practices and conditions which limited the production and income.

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Practices and conditions which contributed to superior efficiency.

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Approved Practices - Field Grown Gladiolus

Practice	Reference
1. Crop planning, selection, rotation schedule	P. 312-316
2. Site and soil selection and sterilization	P. 312-316
3. Crop Sterilization	P. 312-316
4. Watering	P. 312-316
5. Fertilizing	P. 312-316
6. Pest control	P. 312-316
7. Marketing preparation	P. 312-316

Reference: COMMERCIAL FLOWER FORCING, 7th EDITION, LAURIE, KIPLINGER AND NELSON

Goals Stated in Relation to Efficiency

Field Grown Gladiolus

Efficiency Factors	Efficiency Standards	
	Average	Superior
1. Percent of stems marketed	80%	90%
2. No. of plants per 100 sq. ft.	100	110
3. No. of stems per 100 sq. ft.	150	170
4. Percent marketed at pre-determined week	75%	95%
5. Stem length	24"	36"
6. No. of florets/stem (1-3 flowers open at harvest	12	16
7. Percent blemish free	90%	95%

Contest	Efficiency Factors	Min. Efficiency Level for Determining Score (average)	Max. Efficiency Level for Determining Score (superior)
Field Grown Gladiolus	a. Percent stems marketed	80%	90%
	b. No. of plants/100 sq. ft.	100	110
	c. No. of stems/100 sq. ft.	150	170
	d. Marketed at predetermined week	75%	95%
	e. Stem length	24"	26"
	f. No. of florets at harvest	12	16

cy Factors	Min. Efficiency Level for Determining Score (average)	Max. Efficiency Level for Determining Score (superior)	Method for Determining Score
nt stems ted	80%	90%	.05 point for every 1% above 80%
f plants/100 sq. ft.	100	110	.1 point for every 1 plant above 100
f stems/100 sq. ft.	150	170	.05 point for every 1 stem above 150 (max. of 1
ted at predetermined	75%	95%	.05 point for every 1% above 75%
length	24"	26"	.1 point for every 1" above 24"
f florets at harvest	12	16	.25 points for every 1 above 12

Cost Accounting - Field Grown Outdoor Gladiolus

1. Cost of #2 bulbs, varies from 5¢ to 10¢ each depending upon variety. Use the actual price paid per 100 sq. ft.
2. Cost of land/100 sq. ft.
3. Cost of labor/100 sq. ft.
4. Overhead (supplies, equipment, etc.)/100 sq. ft.
5. The marketing cost is close to 20% of the total of all other costs.

Analysis of Field Grown Gladiolus

Name ______________________________

School ______________________________

County ______________________________

No. of sq. ft. of field space ______ a

No. of stems produced __________ b

No. of stems produced/100
sq. ft. (b ÷ a) x 100 __________ c

Date started ______ Ended ______

Variety ______________________

Total receipts ______________ x

Total expenses ______________ y

Labor and management income ____ z
(x - y = z)

Income/100 sq. ft. ____________
(z ÷ a) x 1000

	Poor	Average	Superior	
1.	60%	80%	90%	Percent Stems Marketed
2.	90	100	110	Plants/100 sq. ft.
3.	130	150	170	Stems/100 sq. ft.
4.	70	75	95	Percent Marketed at Predetermined Week
5.	20	24	36	Stem Length (inches)
6.	10	12	16	No. of Florets
7.	1	2	3	Open Florets at Harvest
8.	85	90	95	Blemish Free

Place a red "G" on each line scale at goal set. Place a red "A" on each line scale at efficiency achieved.

Practices and conditions which limited the production and income.

____

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Practices and conditions which contributed to superior efficiency.

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Prepared by The Department of Agricultural Education, The Pennsylvania State University, in cooperation with the Pennsylvania Department of Education and Pennsylvania Vocational Agriculture Teachers. 1974

Supervised Occupational Experience Record Forms
for
Ornamental Horticulture
(Revised)
1974

LANDSCAPE MAINTENANCE AND ESTABLISHMENT -	D 1-20
Landscape Maintenance (except Turfgrass)	D 2-10
Landscape Establishment (except Turfgrass)	D11-18

To be used with any production, occupational or work experience record book.

Department of Agricultural Education
The Pennsylvania State University
in cooperation with
Bureau of Vocational Education
Pennsylvania Department of Education

Using The Forms

The five record sheets included in this unit are intended to be used with any production, occupational or work experience record book for high school vocational agriculture programs.

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Goals are stated in relation to efficiency. They are drawn up on the basis of comparisons of superior achievement with average achievement. The goals given are considered realistic in terms of production enterprises or work experience in production or services occupations. Successful businesses rank somewhere between "average" and "superior" in their goals.

The Efficiency Factor form provides a means for giving a numerical score on goal achievement. It is equally applicable to production enterprises, production occupations or service occupations. The scores are used as one base for comparisons in the judging of record books in regional and state record book contests.

Cost Accounting record forms serve as a guide for calculating the costs and profit in a production enterprise or a production experience. These figures, together with production figures are used in the analysis of the enterprise.

The Employment Achievement form is used in place of the Cost Accounting form when the experiences involve employment in a service occupation rather than production occupations.

The Analysis form should be marked at the beginning of the experience program with a "G" to indicate the goal that a student has set for himself. The same scales are marked with an "A" to indicate actual achievement at the end of the experience program. The analysis sheet provides for an evaluation of the approved practices used and their relationship to production or service and income.

Example of the Use of Efficiency Factors and Production Goals

The Pennsylvania Agricultural Production Program Record Book provides space for the student to list appropriate efficiency factors for each productive enterprise. In the sample below, the figures in the column "Local Efficiency Standards" will have been obtained through group study by the students with the help of the teacher. An analysis of records of similar enterprises completed in previous years by students in the same school will also serve as a guide.

PRODUCTION GOALS: Potted Chrysanthemum ENTERPRISE

	Local Efficiency Standards		Student	Student
Efficiency Factor	Average	Superior	Goal	Achievement
Percent marketed	95%	100%	100%	97%
No. of 6" pots per 100 sq. ft. of bench space	75	100*	100	98
No. of blooms/6" pot	18	24	24	22
Percent of pots in 16" to 18" height range including pot marketed	90%	95%	95%	92%

* Optimum number

Approved Practices - LANDSCAPE MAINTENANCE (Except Turfgrass)

Practice	Reference
1. Pruning	P. 12
2. Mulching	P. 24
3. Soil Sampling	P. 16
4. Fertilizing	P. 16
5. Watering	P. 24
6. Pest Control	P. 25, Appendix D
a. Weeds	
b. Insects	
c. Diseases	
7. Winter Protection	P. 29 Appendix B
8. Tree Removal, Repair, and Replacement	P. 15, 47
9. Planting Garden Flowers	P. 28
10. Ornamantal Pool Maintenance	P. 29
11. Written Contract	P. 39-41

Reference: LANDSCAPE MAINTENANCE AND ESTABLISHMENT, A STUDENT HANDBOOK, PSU 1968

Goals Stated in Relation to Efficiency

Landscape Maintenance (except Turfgrass)

Efficiency Factor	Efficiency Standard	
	Average	Superior
1. Profit	10%	15%
2. Healthy and vigorous trees, shrubs and flowers	Good	Excellent
3. Neat appearance of landscape	Good	Excellent
4. Good renovation of landscape	Good	Excellent
5. Satisfied customer	Good	Excellent

Contest	Efficiency Factors	Min. Efficiency Level for Determining Score (average)	Max. Efficiency Level for Determining Score (superior)
Landscape Maintenance (Except Turfgrass)	a. Profit	10%	15%
	or Employer Satisfaction	Good (90)	Excellent (100)
	b. Health and Vigor		
	1. Trees	Good (90)	Excellent (100)
	2. Shrubs	Good (90)	Excellent (100)
	3. Hedges	Good (90)	Excellent (100)
	c. Freedom from pests and winter damage	Good (90)	Excellent (100)
	d. Neatness (overall appearance)	Good (90)	Excellent (100)
	e. Renovation (improvement of plant material	Good (90)	Excellent (100)
	f. Customer satisfaction	Good	Excellent

ciency Factors	Min. Efficiency Level for Determining Score (average)	Max. Efficiency Level for Determining Score (superior)	Method for Determining Score
Profit	10%	15%	2 points for every 1% over 10%
Employer Satisfaction	Good (90)	Excellent (100)	1 point for each point over 90
Health and Vigor			
1. Trees	Good (90)	Excellent (100)	1 point for every score point over 90
2. Shrubs	Good (90)	Excellent (100)	1 point for every score point over 90
3. Hedges	Good (90)	Excellent (100)	1 point for every score point over 90
Freedom from pests and winter damage	Good (90)	Excellent (100)	1 point for every score point over 90
Neatness (overall appearance)	Good (90)	Excellent (100)	1 point for every score point over 90
Renovation (improvement of plant material	Good (90)	Excellent (100)	1 point for every score point over 90
Customer satisfaction	Good	Excellent	

Cost Accounting - Landscape Maintenance (except Turfgrass)

1. Labor - use actual hourly wages.

2. Equipment cost - divide original cost of equipment by anticipated years of life to get annual depreciation rate. Estimate annual hours of use, and divide this figure into annual depreciation to get hourly charge per machine.

3. Supplies - use actual cost of plant materials, peat, fertilizer, etc.

4. Overhead - includes rent, social security, taxes, utilities, secretary-bookkeeper's salary, etc.

5. Profit - difference between receipts and expenses (usually about 10% of receipts).

Analysis of Landscape Maintenance (except Turfgrass)

Name______________________________ Date started_______Ended______

School____________________________ Total receipts ________________x

County____________________________ Total expenses_______________y

Labor and management__________z

Profit_________________________
(x - (y + z) = profit)

	Poor	Average	Superior
1.	5%	10% Profit	15%
2.	poor	good Health and Vigor of Plant Material	excellent
3.	poor	good Freedom from Pest and Winter Injury	excellent
4.	poor	good Neatness (Overall Appearance)	excellent
5.	poor	good Renovation (Improvement of Plant Material)	excellent
6.	poor	good Fulfillment of Written Contract	excellent
7.	poor	good Customer Satisfaction (Minimum of One Season)	excellent

Place a red "G" on each line scale at goal set. Place a red "A" on each line scale at efficiency achieved.

Practices and conditions which limited the production and income:	Practices and conditions which contributed to superior efficiency:
______________________________	______________________________
______________________________	______________________________
______________________________	______________________________

Landscape Maintenance (except Turfgrass) Employee

1. Personal Satisfaction (Do you enjoy the work?)

Exc. Good Poor

2. Monetary Increases (after 3 to 6 months)

Exc. Good Poor

3. Fringe Benefits (insurance, retirement, other)

Exc. Good Poor

4. Opportunity for Advancement (in 1 to 5 years)

Exc. Good Poor

Analysis of Landscape Maintenance (except Turfgrass) Employee

Name______________________________ Date started _______ Ended______

School____________________________ Total Hours__________________

County____________________________ Income per year_______________

Employer__________________________

Address___________________________

____

	Poor	Average	Superior
1.	poor (80)	good (90) Employer Satisfaction	excellent (100)
2.	poor	good Relations with Other Employees	excellent
3.	96%	98% Accuracy in Performing Work	100%
4.	4%	2% Complaints	1%
5.	90%	95% Neatness and Cleanliness of Work	100%
6.	poor	good Customer Satisfaction	excellent

Place a red "G" on each line scale at goal set. Place a red "A" on each line scale at efficiency achieved.

Practices and conditions which limited the production and income:	Practices and conditions which contributed to superior efficiency:

Approved Practices - Landscape Establishment (except Turfgrass)

Practice	Reference
1. Laying out landscape site	A p. 34-39 Appendix C
2. Cost estimating	B p. 97-100
3. Bidding	B p. 97-100
4. Contracting (written)	A p. 39-41
5. Grading	A p. 45
6. Soil modification	A p. 42-44
7. Installing landscape structures	A p. 45, Appendix F
8. Purchasing nursery stock materials and supplies	A p. 47-56
9. Moving existing plants and installing plant material	A p. 11-31
10. Maintenance under guarantee	Contractor's Written Guarantee

Reference: A - LANDSCAPE MAINTENANCE AND ESTABLISHMENT - A STUDENT HANDBOOK, PSU 1968.
B - LANDSCAPE DESIGN - A STUDENT HANDBOOK, PSU 1968.

Goals Stated in Relation to Efficiency

Landscape Establishment (except Turfgrass)

Efficiency Factors	Efficiency Standards Average	 Superior
1. Profit	10%	15%
2. Healthy vigorous trees, shrubs, flowers, ground covers and vines	Good	Excellent
3. Quality of plant material at the end of one year	Good	Excellent
4. Neat appearance of landscape	Good	Excellent
5. Satisfied Customer	Good	Excellent

Contest	Efficiency Factors	Level for Determining Score (average)	Level for Determining Score (superior)
Landscape Establishment (Except Turfgrass)	a. Profit	10%	15%
	or Employer satisfaction	Good (90)	Excellent (100)
	b. Percent replacement cost	5%	0%
	c. Quality of plant material at end of 1st year	Good (90)	Excellent (100)
	d. Quality of physical structures at end of 1st year	Good (90)	Excellent (100)
	e. Customer satisfaction	Good (90)	Excellent (100)

ficiency Factors	Level for Determining Score (average)	Level for Determining Score (superior)	Method for Determining Score
Profit	10%	15%	.2 points for every 1% over 10%
Employer satisfaction	Good (90)	Excellent (100)	.1 point for every 1 point over 90
Percent replacement cost	5%	0%	.2 point for every 1% under 5%
Quality of plant material at end of 1st year	Good (90)	Excellent (100)	.1 point for every score point over 90
Quality of physical structures at end of 1st year	Good (90)	Excellent (100)	.1 point for every score point over 90
Customer satisfaction	Good (90)	Excellent (100)	.1 point for every score point over 90

Cost Accounting - Landscape Establishment (except Turfgrass)

1. Labor - use actual hourly wages.
2. Equipment cost - divide original cost of equipment by anticipated years of life to get annual depreciation rate. Estimate annual hours of use, and divide this figure into annual depreciation to get hourly charge per machine.
3. Supplies - use actual cost of plant materials, peat, fertilizer, etc.
4. Overhead - include rent, social security, taxes, utilities, secretary-bookkeeper's salary, etc.
5. Profit - difference between receipts and expenses (usually about 10% of receipts.)

Analysis of Landscape Establishment (except Turfgrass)

Name________________________

School________________________

County________________________

Date started______Ended______

Total receipts____________x

Total expenses____________y

Labor and management________z

Profit__________________

(x - (y + z) = profit)

	Poor	Average	Superior
1.	5%	10%	15%
		Percent Profit	
2.	80%	90%	100%
		% Plants Established Under Guarantee, by Plant Cost	
3.	Poor	Good	Excellent
		Quality of Plant Material at end of 1st Year	
4.	Poor	Good	Excellent
		Quality of Physical Structures at End of 1st Year	
5.	Poor	Good	Excellent
		Fulfillment of Written Contract	
6.	Poor	Good	Excellent
		Customer Satisfaction	

Place a red "G" on each line scale at goal set. Place a red "A" on each line scale at efficiency achieved.

Practices and conditions which limited the production and income.	Practices and conditions which contributed to superior efficiency.
____________________	____________________
____________________	____________________
____________________	____________________

Landscape Establishment (except Turfgrass) Employee

1. Personal Satisfaction (Do you enjoy the work?)

Exc. Good Poor

2. Monetary Increases (after 3 to 6 months)

Exc. Good Poor

3. Fringe Benefits (Insurance, retirement, other)

Exc. Good Poor

4. Opportunity for Advancement (In 1 to 5 years)

Exc. Good Poor

5. Variety of educational experience according to occupational goals

Exc. Good Poor

Analysis of Landscape Establishment (except Turfgrass) Employee

Name____________________ Date started_______ Ended_______

School____________________ Total Hours____________

County____________________ Income Per Year____________

Employer____________________

Address____________________

____

	Poor	Average	Superior
1.	poor (80)	good (90)	excellent (100)
		Employer Satisfaction	
2.	poor	good	excellent
		Relations with Other Employees	
3.	96%	98%	100%
		Accuracy in Performing Work	
4.	4%	2%	1%
		Complaints	
5.	90%	95%	100%
		Neatness and Cleanliness of Work	
6.	poor	good	excellent
		Customer Satisfaction	

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____________________	____________________
____________________	____________________
____________________	____________________

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NURSERY PRODUCTION - FIELD GROWN TREES-E 1-70

European White Birch	E 2-8	White Pink	E 39-43
Thornless Honey Locust	E 9-13	Canada Hemlock	E 44-48
Pin Oak	E14-18	Flowering Crabapple	E 49-53
European Mountain Ash	E19-23	Japanese Maple	E 54-58
Norway Maple	E24-28	Kwazan Cherry	E 59-63
Norway Spruce	E29-33	Flowering Dogwood	E 64-69
Concolor Fir	E34-38		

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PRODUCTION GOALS: Potted Chrysanthemum ENTERPRISE

Efficiency Factor	Local Efficiency Standards		Student	Student
	Average	Superior	Goal	Achievement
Percent marketed	95%	100%	100%	97%
Number of 6" pots per 100 sq. ft. of bench space	75	100*	100	98
Number of blooms/6" pot	18	24	24	22
Percent of pots in 16" to 18" height range including pot marketed	90%	95%	95%	92

* Optimum number

Approved Practices - Field Grown B&B or Bare Root Deciduous trees European White Birch, Betula pendula "alba"

Practice	Reference
1. Block planning, species selection, site and	P. 35-43, 105-106, 203
2. Soil preparation	P. 107-109
3. Lining out and planting	P. 109-112, 129
4. Watering	P. 112
5. Fertilizing	P. 114-117
6. Pest control (weeds, insect, disease)	P. 121-127
7. Pruning, supporting, and root pruning	P. 117-121
8. Digging	P. 134-138
9. Grading and market preparation	P. 139-141, 178-187

Reference - NURSERY PRODUCTION, A STUDENT HANDBOOK PSU, 1971

Goals Stated in Relation to Efficiency

Nursery Production, Field Grown B&B or Bare Root Deciduous Trees
European White Birch, Betula pendula "alba"

Efficiency Factors	Efficiency Standards	
	Average	Superior
1. Percent Marketed	90%	95%
2. Number of plants per 1000 sq. ft.	63	70
3. Years of plant growth to marketing at 1" caliper	5	4
4. Symmetrical branching	Good	Excellent
5. Blemish free	90%	95%
6. Percent of trees conforming to AAN Standards	80%	90%

Contest	Efficiency Factors	Min Efficiency Level for Determining Score (Average)	Max Efficiency Level for Determining Score (Superior)	Met
Field Grown B & B or Bare Root Deciduous Trees European White Birch Betula pendula "alba"	a. % marketed	90%	95%	.1 poin over 9
	b. Number of plants per 1000 sq. ft.	63	70	.015 po 1000 s to exc
	c. % of crop reaching a 1" caliper or better	90%	95%	.1 poin over 9
	d. Years of plant growth* to market a 1" caliper tree	5	4	.5 poin months 5 year
	e. % blemish-free trees (free of disease, insect, & mech.	90%	95%	.1 poin over 9
	f. % conforming to AAN Standards	80%	90%	.05 poi over 8

* Plant growth must include age of liner plus years of growth in the field.

actors	Min Efficiency Level for Determining Score (Average)	Max Efficiency Level for Determining Score (Superior)	Method of Determining Score
ed	90%	95%	.1 point for every % point over 90%
f plants sq. ft.	63	70	.015 point for every plant/1000 sq. ft. over 63 - not to exceed 70 plants/1000 sq. ft.
p reaching iper or	90%	95%	.1 point for every % point over 90
plant growth* t a 1" caliper	5	4	.5 point for every six (6) months harvested before the 5 years
h-free trees disease, & mech.	90%	95%	.1 point for every % point over 90%
rming to AAN ds	80%	90%	.05 points for every % point over 80%

owth must include age of liner plus years of growth in the field.

Cost Accounting - Nursery Production

Field Grown B & B or Bare Root Deciduous Trees, White Birch, Betula pendula "alba":

1. Cost of lining out stock from 5¢ to 35¢ per plant. Use actual price paid.
2. Cost of land per 1000 sq. ft.
3. Cost of labor chargeable to this crop, about $167 per 1000 sq. ft.
4. Overhead (supplies, equipment) per 1000 sq. ft.
5. Marketing cost - average about 20% of sum of all other costs.

Analysis of B&B or Bare Root Deciduous Trees

European White Birch, Betula pendula "alba"

Name ____________________ Date started __________ Ended ______

School ____________________ Genus __________ Species __________

County ____________________ Total receipts ______________

Square feet/used ______________ a Total expenses ______________

Number of trees sold B&B __________ Labor and management income __________ (x - y = z)

Number of trees sold BR __________

Number of trees/1000 sq. ft. __________ Income/1000 sq. ft. (z ÷ a) x 1000 __________

	Poor	Average	Superior
1. Percent Marketed	88%	90%	95%
2. Number of plants/1000 square feet	56	63	70
3. % of Crop reaching 1" caliper or better	85	90	95
4. Years to market 1" caliper trees	6	5	4
5. Percent of trees conforming to AAN Standards	75%	80%	90%
6. Symmetrical branching	Poor	Good	Excellent
7. Blemish free	85%	90%	95%

Place a red "G" on each line scale at goal set. Place a red A on each line scale at efficiency achieved.

Practices and conditions which limited the production and income:	Practices and conditions which contributed to superior efficiency:
____________________	____________________
____________________	____________________
____________________	____________________

Approved Practices - Field Grown B & B or Bare Root Deciduous Trees
Thornless Honeylocust, Gleditsia triancanthos inermis

Practice	Reference
1. Block planning, species selection, site and	p. 35-43, 105-106, 203
2. Soil preparation	p. 107-109
3. Lining out and planting	p. 109-112, 128-129
4. Watering	p. 112
5. Fertilizing	p. 114-117
6. Pest control (weeds, insect, disease)	p. 121-127
7. Pruning, supporting, and root pruning	p. 117-121
8. Digging	p. 134-138
9. Grading and market preparation	p. 139-141, 178-187

Reference - NURSERY PRODUCTION, A STUDENT HANDBOOK PSU, 1971

Goals Stated in Relation to Efficiency

Nursery Production Field Grown B&B or Bare Root Deciduous Trees
Thornless Honeylocust, *Gleditsia tricanthos inermis*

Efficiency Factors	Efficiency Standards Average	 Superior
1. Percent Marketed	90%	95%
2. Number of plants per 1000 sq. ft.	63	70
3. Symmetrical branching	Good	Excellent
4. Blemish free	90%	95%
5. Years of plant growth to marketing at 1" caliper	5	4
6. Percent of trees conforming to AAN Standards	80%	90%

Contest	Efficiency Factors	Min. Efficiency Level for Determining Score (Average)	Max. Efficiency Level for Determining Score (Superior)	Met
Field Grown B&B or Bare Root Deciduous Trees	a. % marketed	90%	95%	.2 po
	b. Number of plants per 1000 sq. ft.	63	70	.015 sq. f ceed
Thornless Honey Locust				
Gleditsia tricanthos inermis	c. % of crop reaching a 1 1/2" caliper	90%	95%	.2 poi 90%
	d. Years of plants growth* to market a 1 1/2 caliper tree	5	4	.5 poi months
	e. % blemish-free trees (free of insect, disease, & mech. damage)	90%	95%	.2 poi 90%
	f. % conforming to AAN Standards	80%	90%	.05 po 80%

*Plant growth must include age of liner plus years of growth in the field.

ncy Factors	Min. Efficiency Level for Determining Score (Average)	Max. Efficiency Level for Determining Score (Superior)	Method of Determining Score
arketed	90%	95%	.2 points for every % over 90%
ber of plants 1000 sq. ft.	63	70	.015 point for every plant/1000 sq. ft. over 63 - not to exceed 70 plants/1000 sq. ft.
f crop reaching 1/2" caliper	90%	95%	.2 point for every % point over 90%
rs of plants growth* market a 1 1/2 caliper e	5	4	.5 points for every six (6) months harvested before 5 years
lemish-free trees ee of insect, ease, & mech. damage)	90%	95%	.2 points for every % point over 90%
onforming to AAN ndards	80%	90%	.05 point for every % point over 80%

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rowth must include age of liner plus years of growth in the field.

Cost Accounting - Nursery Production

Field Grown B&B or Bare Root Deciduous Trees, Thornless Honeylocust, Gleditsia tricanthos inermis

1. Cost of lining out stock from 5¢ to 35¢ per plant. The actual price paid.
2. Cost of land per 1000 sq. ft.
3. Cost of labor chargeable to this crop, about $167 per 1000 sq. ft.
4. Overhead (supplies, equipment) per 1000 sq. ft.
5. Marketing cost - average about 20% of sum of all other costs.

Analysis of B&B or Bare Root Deciduous Trees
Thornless Honeylocust, Gleditsia tricanthos inermis

Name ______________________ Date started __________ Ended __________

School ______________________ Genus __________ Species __________

County ______________________ Total receipts __________ x

Square feet/used __________ a Total expenses __________ y

Number of trees sold B&B __________ Labor and management income __________ z
(x-y = z)

Number of trees sold BR __________

Number of trees/1000 sq. ft. _____ Income/1000 sq. ft. __________
(z ÷ a) x 1000

	Poor	Average	Superior
1. Percent Marketed	88%	90%	95%
2. Number of plants/1000 square feet	56	63	70
3. Years of growth to reach 1 1/2" caliper	6	5	4
4. Symmetrical branching	Poor	Good	Excellent
5. Blemish free	85%.	90%	95%
6. Percent of trees conforming to AAN Standards	75%	80%	90%

Place a red "G" on each line scale at goal set. Place a red A on each line scale at efficiency achieved.

Practices and conditions which limited the production and income:

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Practices and conditions which contributed to superior efficiency:

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____

Approved Practices - Field Grown B&B and Bare Root Deciduous Trees
Pin Oak, Quercus palustris

Practice	References
1. Block planning, species selection, site and soil selection, and crop rotation	P. 35-43, 105-106, 203
2. Soil preparation	P. 107-109
3. Lining out and planting	P. 109-112, 128-129
4. Watering	P. 112
5. Fertilizing	P. 114-117
6. Pest control (weeds, insect, disease)	P. 121-127
7. Pruning, supporting, and root pruning	P. 117-121
8. Digging	P. 134-138
9. Grading and market preparation	P. 139-141 178-187

Reference - NURSERY PRODUCTION, A STUDENT HANDBOOK PSU, 1971

Goals Stated in Relation to Efficiency

Nursery Production Field Grown B&B and Bare Root Deciduous Trees
Pin Oak, Quercus palustris

Efficiency Factors	Efficiency Standards	
	Average	Superior
1. Percent Marketed	90%	95%
2. Number of plants per 1000 sq. ft.	63	70
3. Symmetrical branching	Good	Excellent
4. Blemish free	90%	95%
5. Years of plant growth to Marketing at 1" caliper	6	5
6. Percent of trees conforming to AAN Standard	80%	90%

Contest	Efficiency Factors	Min. Efficiency Level for Determining Score (average)	Max. Efficiency Level for Determining Score (superior)
Field Grown B&B and Bare Root Deciduous Trees Pin Oak Quercus palustris	a. % Marketed	90%	95%
	b. Number of plants per 1000	63	80
	c. Years of plants growth* to market a 1" caliper tree	6	5
	d. % of crop reaching a 1" caliper	90%	95%
	e. % blemish-free trees (free of insect, disease, and mech. damage)	90%	95%
	f. % conforming to AAN Standard	80%	90%

* Plant growth must include the age of the liner plus the years of growth

Efficiency Factors	Min. Efficiency Level for Determining Score (average)	Max. Efficiency Level for Determining Score (superior)	Method of Determining Score
a. % Marketed	90%	95%	.2 points for every % point over 90%
b. Number of plants per 1000	63	80	.015 point for every plant/1000 sq. ft. above 63 - not to exceed 70 plants/1000 sq. ft.
c. Years of plants growth* to market a 1" caliper tree	6	5	.5 points for every 6 months under 5 years
d. % of crop reaching a 1" caliper	90%	95%	.1 point for every % point over 90%
e. % blemish-free trees (free of insect, disease, and mech. damage)	90%	95%	.5 point for every % point over 80%
f. % conforming to AAN Standard	80%	90%	.05 point for every 6 months harvested before 6 years

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*Plant growth must include the age of the liner plus the years of growth in the field.

Cost Accounting - Nursery Production
Field Grown B&B and Bare Root Deciduous Trees, Pin Oak, Quercus palustris

1. Cost of lining out stock from 5¢ to 35¢ per plant. Use actual price paid.
2. Cost of land per 1000 sq. ft.
3. Cost of labor chargeable to this crop, average $167 per 1000 sq. ft.
4. Overhead (supplies, equipment) per 1000 sq. ft.
5. Marketing cost - average 20% of sum of all other costs.

Analysis of B&B and Bare Root Deciduous Trees
Pin Oak, Quercus palustris

Name ______________________ Date Started __________ Ended __________

School ______________________ Genus ______________ Species __________

County ______________________ Total receipts ______________________ x

Square feet used ______________ a Total expenses ______________________ y

Number of trees sold B&B __________ Labor and management income __________ z
(x - y =z)

Number of trees sold BR __________

Number of trees/1000 sq. ft. ______ Income/1000 sq. ft. ______________
(z ÷ a) x 1000

Poor Average Superior

88% 90% 95%
1. Percent Marketed

56 63 70
2. Number of plants/1000 square feet

7 6 5
3. Years of growth to reach 1" caliper

Poor Good Excellent
4. Symmetrical branching

85% 90% 95%
5. Blemish free

75% 80% 90%
6. Percent of trees conforming to AAN Standard

85% 90% 95%
7. Percent of crop having 1" cal. at marketing

Place a red "G" on each line scale at goal set. Place a red "A" on each line scale at efficiency acheived.

Practices and conditions which limited the production and income:	Practices and conditions which contributed to superior efficeincy:
______________________	______________________
______________________	______________________
______________________	______________________

Approved Practices - Field Grown B&B and Bare Root Deciduous Trees
European Mountain Ash, Sorbus aucuparia

Practice	Reference
1. Block planning, species selection, site and soil selection, and crop rotation	P. 35-43, 105-106, 203
2. Soil preparation	P. 107-109
3. Lining out and planting	P. 109-112, 129
4. Watering	P. 112
5. Fertilizing	P. 114-117
6. Pest control (weeds, insect, disease)	P. 121-127
7. Pruning, supporting, and root pruning	P. 117-121
8. Digging	P. 134-138
9. Grading and market preparation	P. 139-141, 178-187

Reference - NURSERY PRODUCTION - A STUDENT HANDBOOK, PSU - 1971

Goals Stated in Relation to Efficiency

Nursery Production, Field Grown B&B and Bare Root Deciduous Trees, European Mountain Ash, Sorbus aucuparia

Efficiency Factors	Efficiency Standards	
	Average	Superior
1. Percent Marketed	63	70
2. Number of plants/1000 sq. ft.	90%	95%
3. Symmetrical branching	Good	Excellent
4. Blemish free	90%	95%
5. Years of plant growth to marketing at 1" caliper	5	4
6. Percent of trees conforming to AAN Standard	80%	90%

Contest	Efficiency Factors	Min. Efficiency Level for Determining Score (average)	Max. Efficiency Level for Determining Score (superior)
Field Grown B&B and Bare Root Deciduous Trees European Mountain Ash Sorbus aucuparia	a. % Marketed	90%	95%
	b. Number of plants per 1000 sq. ft.	63	70
	c. % of crop reaching a 1" caliper or better	90%	95%
	d. Years of plants growth* to market a 1" caliper tree	5	4
	e. % blemish-free trees (free of insect, disease and mech. injury)	90%	95%
	f. % conforming to AAN Standard	80%	90%

* Plant growth must include age of liner plus years of growth in the fi

Efficiency Factors	Min. Efficiency Level for Determining Score (average)	Max. Efficiency Level for Determining Score (superior)	Method of Determining Score
a. % Marketed	90%	95%	.2 points for every % point over 90%
b. Number of plants per 1000 sq. ft.	63	70	.05 point for every plant per 1000 sq. ft. over 63 - not to exceed 70 plants per 1000 sq. ft
c. % of crop reaching a 1" caliper or better	90%	95%	.1 point for every % point over 90%
d. Years of plants growth* to market a 1" caliper tree	5	4	.5 points for every six (6) months harvested before the 4 years
e. % blemish-free trees (free of insect, disease and mech. injury)	90%	95%	.1 point for every % point over 90%
f. % conforming to AAN Standard	80%	90%	.05 point for every % point over 80%

* Plant growth must include age of liner plus years of growth in the field.

Cost Accounting - Nursery Production
Field Grown B&B and Bare Root Deciduous Trees, European Mountain Ash, *Sorbus aucuparia*

1. Cost of lining out stock from 5¢ to 35¢ per plant. Use actual price paid.
2. Cost of land per 1000 sq. ft.
3. Cost of labor **chargeable** to this crop, average $167 per 1000 sq. ft.
4. Overhead (supplies, equipment) per 1000 sq. ft.
5. Marketing cost - average 20% of sum of all other costs.

Analysis of B&B and Bare Root Deciduous Trees
European Mountain Ash, Sorbus aucuparia

Name ______________________ Date Started __________ Ended __________

School ______________________ Genus __________ Species __________

County ______________________ Total receipts ______________________ x

Square feet/used __________ a Total expenses ______________________ y

Number of trees sold B&B __________ Labor and management income __________ z
(x - y = z)

Number of trees sold BR __________

Number of trees/1000 sq. ft. ______ Income/1000 sq. ft. ______________
(z ÷ a) x 1000

Poor — Average — Superior

1. 88% — 90% — 95%
Percent Marketed

2. 56 — 63 — 70
Number of plants/1000 square feet

3. 6 — 5 — 4
Years of growth to 1" caliper

4. Poor — Good — Excellent
Symmetrical branching

5. 85% — 90% — 95%
Blemish free

6. 75% — 80% — 90%
Percent of trees conforming to AAN Standard

7. 85% — 90% — 95%
Percent of crop having 1" cal. at marketing

Place a red "G" on each line scale at goal set. Place a red "A" on each line scale at efficiency achieved.

Practices and conditions which limited the production and income	Practices and conditions which contributed to superior efficiency
______________________	______________________
______________________	______________________
______________________	______________________

Approved Practices - Field Grown B&B and Bare Root Deciduous Trees
Norway Maple, Acer platanoides

Practice	Reference
1. Block planning, species selection, site and soil selection, and crop rotation	P. 35-43, 105-106, 203
2. Soil preparation	P. 107-109
3. Lining out and planting	P. 109-112, 123-219
4. Watering	P. 112
5. Fertilizing	P. 114-117
6. Pest control (seeds, insects, disease)	P. 121-127
7. Pruning, supporting, and root pruning	P. 117-121
8. Digging	P. 134-138
9. Grading and market preparation	P. 139-141, 178-187

Reference - NURSERY PRODUCTION, A STUDENT HANDBOOK, PSU, 1971

Goals Stated in Relation to Efficiency

Nursery Production, Field Grown B&B and Bare Root Deciduous Trees, Norway Maple, Acer platanoides

	Efficiency Standards	
Efficiency Factors	Average	Superior
1. Percent Marketed	90%	95%
2. Number of plants per 1000 sq. ft.	63	70
3. Symmetrical branching	Good	Excellent
4. Blemish free	90%	95%
5. Years of plant growth to marketing at 1" caliper	6	5
6. Percent of trees conforming AAN Standard	80%	90%

Contest	Efficiency Factors	Min. Efficiency Level for Determing Score (average)	Max. Efficiency Level for Determing Score (superior)	M
Field Grown B&B and Bare Root Deciduous Trees Norway Maple Acer platanoides	a. % Marketed	90%	95%	. p
	b. Number of plants per 1000 sq. ft.	63	70	. p o p
	c. % of crop reaching a 1" caliper or better	90%	95%	. p
	d. Years of plants growth* to market a 1" caliper tree	6	5	. m f
	e. % blemish-free trees (free of disease, insect, and mech. damage)	90%	95%	. p
	f. % conforming to AAN Standard	80%	90%	. p

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* Plant growth must include age of liner and years of growth in the fi

fficiency Factors	Min. Efficiency Level for Determing Score (average)	Max. Efficiency Level for Determing Score (superior)	Method of Determining Score
. % Marketed	90%	95%	.2 points for every % point over 90%
. Number of plants per 1000 sq. ft.	63	70	.015 point for every plant/1000 sq. ft. over 63 - not to exceed 70 plants/1000 sq. ft.
c. % of crop reaching a 1" caliper or better	90%	95%	.1 point for every % point over 90%
d. Years of plants growth* to market a 1" caliper tree	6	5	.5 points for every 6 months harvested before the 6 years
e. % blemish-free trees (free of disease, insect, and mech. damage)	90%	95%	.1 point for every % point over 90%
f. % conforming to AAN Standard	80%	90%	.05 point for every % point over 80%

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* Plant growth must include age of liner and years of growth in the field.

Cost Accounting - Nursery Production
Field Grown B&B and Bare Root Deciduous Trees, Norway Maple, Acer platanoides

1. Cost of lining out stock from 5¢ to 35¢ per plant. Use actual price paid.
2. Cost of land per 1000 sq. ft.
3. Cost of labor chargable to this crop, average $167 per 1000 sq. ft.
4. Overhead (supplies, equipment) per 1000 sq. ft.
5. Marketing cost - average 20% of sum of all other costs.

Analysis of B&B and Bare Root Deciduous Trees
Norway Maple, Acer platanoides

Name____________________ Date started__________ Ended________

School____________________ Genus____________ Species__________

County____________________ Total receipts________________x

Square feet used____________a Total expenses________________y

Number of trees sold B&B________ Labor and management income________z
(x - y = z)

Number of trees sold BR________

Number of trees/1000 sq. ft.______ Income/1000 sq. ft.______________
(z ÷ a) x 1000

	Poor	Average	Superior
1. Percent Marketed	88%	90%	95%
2. Number of plants/1000 square feet	56	63	70
3. Years of growth to 1" caliper	7	6	5
4. Symmetrical branching	Poor	Good	Excellent
5. Blemish free	85%	90%	95%
6. Percent of trees conforming to AAN Standard	75%	80%	90%
7. Percent of crop having 1" cal. at marketing	85%	90%	95%

Place a red "G" on each line scale at goal set. Place a red "A" on each line scale at efficeincy achieved.

Practices and conditions which limited the production and income:

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Practices and conditions which contributed to superior efficeincy:

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Approved Practices - Field Grown B&B Evergreen Trees
Norway Spruce, Picea abies

Practice	Reference
1. Block planning, species selection, site and soil selection, and crop rotation	P. 35-43, 105-106, 203
2. Soil preparation	P. 107-109
3. Lining out and planting	P. 109-112
4. Watering	P. 112
5. Fertilizing	P. 117-114
6. Pest control (weeds, insects, and disease)	P. 121-127
7. Pruning, supporting, and root pruning	P. 117-121
8. Digging	P. 134-138
9. Grading and market preparation	P. 139-141, 178-187

Reference: NURSERY PRODUCTION, A STUDENT HANDBOOK, PSU, 1971

Goals Stated in Relation to Efficiency
Norway Spruce, Picea abies

Nursery Production - Field Grown
B&B Evergreen Trees

Efficiency Factors	Efficiency Standards Average	 Superior
1. % Marketed	90%	95%
2. Number of plants per 1000 sq. ft.	63	70
3. Dense and symmetrical growth	Good	Excellent
4. % blemish free	90%	95%
5. Intense color	Good	Excellent
6. Years of growth to marketing a 2-3' sheared plant	6	5
7. % conforming to AAN Standard	80%	90%

Contest	Efficiency Factors	Min. Efficiency Level for Determining Score (average)	Max. Efficiency Level for Determining Score (superior)	Me
B & B Evergreen Trees	a. % Marketed	90%	95%	.1 po
Norway Spruce Picea abies	b. Number of plants per 1000 sq. ft.	63	70	.0 10 no 10
	c. % of crop reaching a 2-3' height	90%	95%	.1 ov
	d. Years of plants growth to market a 2-3" sheared plant*	5	4	.5 mo 5
	e. % blemish free trees (free of insect, disease, and mech. injury)	90%	95%	.1 po
	f. % conforming to AAN Standard	80%	90%	.0 po

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* Years of growth must include age of liner plus years of growth in the f

iciency Factors	Min. Efficiency Level for Determining Score (average)	Max. Efficiency Level for Determining Score (superior)	Method for Determining Score
% Marketed	90%	95%	.1 point for every % point over 90%
Number of plants per 1000 sq. ft.	63	70	.05 point for every plant/ 1000 sq. ft. over 63 - not to exceed 70 plants/ 1000 sq. ft.
% of crop reaching a 2-3' height	90%	95%	.1 point for every % point over 90%
Years of plants growth to market a 2-3" sheared plant*	5	4	.5 points for every 6 months harvested before 5 years
% blemish free trees (free of insect, disease, and mech. injury)	90%	95%	.1 point for every % point over 90%
% conforming to AAN Standard	80%	90%	.05 point for every % point over 80%

ears of growth must include age of liner plus years of growth in the field

Cost Accounting - Nursery Production
Field B&B Evergreen Trees, Norway Spruce, Picea abies

1. Cost of lining out grafts about 35¢ per plant. Use actual price paid.
2. Cost of land per 1000 sq. ft.
3. Cost of labor chargable to this crop, averages $167 per 1000 sq. ft.
4. Overload (supplies, equipment) per 1000 sq. ft.
5. Marketing cost - average 20% of sum of all other costs.

Analysis of Nursery Production
Field B&B Evergreen Trees, Norway Spruce, Picea abies

Name____________________ Date Started________ Ended__________

School____________________ Genus________ Species__________

County____________________ Total receipts________________x

Sq. ft. of field space________a Total expenses________________y

Total plants________________ Labor and Management____________z
(x - y = z)

No. of plants/1000 sq. ft.________ Income/1000 sq. ft.____________
(z ÷ a) x 1000

Poor Average Superior

1. Plants marketed
80% 90% 95%

2. Plants/1000 sq. ft.
56 63 70

3. Years of growth to havesting crop
6 5 4

4. Dense and symmetrical growth
Poor Good Excellent

5. % Blemish free
85% 90% 95%

6. Intense color
Poor Good Excellent

7. % Conforming to AAN Standard
75% 80% 90%

8. % of crop reaching 2.3 ft., sheared
85% 90% 95%

Place a red "G" on each line scale at goal set. Place a red "A" on each line scale at efficeincy achieved.

Practices and conditions which limited the production and income:	Practices and conditions which contributed to superior efficiency:
________________	________________
________________	________________
________________	________________

Approved Practices - Field Grown B&B Evergreen Trees
Concolor Fir, Abies concolor

Practice	Reference
1. Block Planning, species Selection, Site and Soil Selection, and Crop Rotation	P. 35-43, 105-106, 203
2. Soil Preparation	P. 107-109
3. Lining out and Planting	P. 109-112
4. Watering	P. 112
5. Fertilizing	P. 114-117
6. Pest Control (Weeds, Insects, and Disease)	P. 121-127
7. Pruning, Supporting, and Root Pruning	P. 117-121
8. Digging	P. 134-138
9. Grading and Marketing Preparation	P. 139-141, 178-187

Reference: NURSERY PRODUCTION, A STUDENT HANDBOOK, PSU 1971

Goals Stated in Relation to Efficiency
Concolor Fir, Abies concolor

Nursery Production - Field Grown
Evergreen Trees

Efficiency Factors	Efficiency Standards	
	Average	Superior
1. Marketed	90%	95%
2. No. of plants per 1000 sq. ft.	63	70
3. Years of growth to marketing a 2-3' sheared plant	6	5
4. Dense and symmetrical growth	Good	Excellent
5. Blemish free	90%	95%
6. Intense color	Good	Excellent
7. % Conforming to AAN Standard	80%	90%

Contest	Efficiency Factors	Min. Efficiency Level for Determining Score (average)	Max. Efficiency Level for Determining Score (superior)	Met
B&B Evergreen Trees Concolor Fir Abies concolor	a. % Marketed	90%	95%	.1 poi over 9
	b. Number of plants per 1000 sq. ft.	63	70	.015 p 1000 s to exc
	c. % of crop reaching 2-3' height	90%	95%	.1 poi 90%
	d. Years of plants growth to market a 2-3' sheared plant*	6	5	.5 poi harves
	e. % Blemish free trees (free of insect, disease, and mech. injury)	90%	95%	.1 poi over 9
	f. Conforming to AAN Standard	80%	90%	.05 po over 8

* Years of growth must include age of liner plus years of growth in the fi

ciency Factors	Min. Efficiency Level for Determining Score (average)	Max. Efficiency Level for Determining Score (superior)	Method for Determining Score
% Marketed	90%	95%	.1 point for every % point over 90%
Number of plants per 1000 sq. ft.	63	70	.015 point for every plant/1000 sq. ft. over 63 - not to exceed 10 plants/1000 sq. ft
% of crop reaching 2-3' height	90%	95%	.1 point for every % point over 90%
Years of plants growth to market a 2-3' sheared plant*	6	5	.5 point for every 6 month harvest before 6 years
% Blemish free trees (free of insect, disease, and mech. injury)	90%	95%	.1 point for every % point over 90%
Conforming to AAN Standard	80%	90%	.05 point for every % point over 80%

ears of growth must include age of liner plus years of growth in the field.

Cost Accounting - Nursery Production
Field Grown B&B Evergreen Trees, Concolor Fir, Abies concolor

1. Cost of lining out stock from 5¢ to 35¢ per plant. Use actual price paid.

2. Cost of land per 1000 sq. ft.

3. Cost of labor chargable to this crop, about $167 per 1000 sq. ft.

4. Overhead (supplies, equipment) per 100 sq. ft.

5. Marketing cost - about 20% of sum of all other costs.

Analysis of Nursery Production
Field B&B Evergreen Trees, Concolor Fir, Abies concolor

Name ____________________ Date started ____________ Ended ____________

School ____________________ Genus ____________ Species ____________

County ____________________ Total receipts ____________________ x

Sq. ft. of field space ____________ a Total expenses ____________________ y

Total plants ____________ b Labor and Management ____________________ z
(x - y = z)

No. of plants/1000 sq. ft. ________ Income/1000 sq. ft. ____________________
(b ÷ a) x 1000 (z ÷ a) x 1000

	Poor	Average	Superior
1. Plants Marketed	80%	90%	95%
2. Plants/1000 sq. ft.	56	63	70
3. Years of growth to harvesting crop at 2 to 3' height	7	6	5
4. Dense and symmetrical growth	Poor	Good	Excellent
5. % Blemish Free	85%	90%	95%
6. Intense color	Poor	Good	Excellent
7. % Conforming to AAN Standard	75%	80%	90%
8. % reaching 2 - 3 ft. in height at 95% marketing	85%	90%	95%

Place a red "G" on each line scale at goal set. Place a red "A" on each line scale at efficiency achieved.

Practices and conditions which limited production and income:	Practices and conditions which contributed to superior efficiency:
____________________	____________________
____________________	____________________
____________________	____________________

Approved Practices - Field Grown B&B Evergreen Trees
White Pine, Pinus strobus

Practice	Reference
1. Block planning, species selection, site and soil selection, and crop rotation	P. 35-43, 105-106, 203
2. Soil preparation	P. 107-109
3. Lining out and planting	P. 109-112
4. Watering	P. 112
5. Fertilizing	P. 114-117
6. Pest control (weeds, insects, and disease)	P. 121-127
7. Pruning, supporting, and root pruning	P. 117-121
8. Digging	P. 137-138
9. Grading and market preparation	P. 139-141, 178-187

Reference: NURSERY PRODUCTION - A STUDENT HANDBOOK, PSU, 1971

Goals Stated in Relation to Efficiency
White Pine, Pinus strobus

Nursery Production - Field Grown
Evergreen Trees

Efficiency Factors	Efficiency Standards	
	Average	Superior
1. % Marketed	90%	95%
2. No. of plants per 1000 sq. ft.	83	70
3. Years of growth to marketing a 2-3' sheared plant	6	5
4. Dense and symmetrical growth	Good	Excellent
5. % Blemish free	90%	95%
6. Intense color	Good	Excellent

Contest	Efficiency Factors	Min. Efficiency Level for Determining Score (average)	Max. Efficiency Level for Determining Score (superior)	Meth
B & B Evergreen Trees White Pine Pinus strobus	a. % Marketed	90%	95%	.1 poi over 9
	b. Number of plants per 1000 sq. ft.	63	70	.015 p 1000 s to exc
	c. % of crop reaching a 2-3' height	90%	95%	.1 poi over 9
	d. Years of plants growth to market a 2-3' sheared plant*	6	5	.5 poi harves
	e. % Blemish free trees (free of insect, disease and mech. injury)	90%	95%	.1 poi over 9
	f. % Conforming to AAN Standard	80%	90%	.05 po point

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* Years of growth must include age of liners plus years of growth in the fi

ency Factors	Min. Efficiency Level for Determining Score (average)	Max. Efficiency Level for Determining Score (superior)	Method of Determining Score
Marketed	90%	95%	.1 point for every % point over 90%
mber of plants r 1000 sq. ft.	63	70	.015 point for each plant/ 1000 sq. ft. over 63 - not to exceed 70/1000 sq. ft.
of crop reaching 2-3'height	90%	95%	.1 point for every % point over 90%
ars of plants growth market a 2-3' sheared ant*	6	5	.5 point for every 6 months harvested before 6 years
Blemish free trees ree of insect, disease d mech. injury)	90%	95%	.1 point for every % point over 90%
Conforming to AAN andard	80%	90%	.05 point for every % point over 80%

rs of growth must include age of liners plus years of growth in the field.

Cost Accounting - Nursery Production
Field Grown B&B Evergreen Trees, White Fine, Pinus strobus

1. Cost of lining out stock from 5¢ to 35¢ per plant. Use actual price paid.
2. Cost of land about $98 per 1000 sq. ft.
3. Cost of labor chargeable to this crop, about $167 per 1000 sq. ft.
4. Overhead (supplies, equipment) per 1000 sq. ft.
5. Marketing cost - about 20% of sum of all other costs.

Analysis of Nursery Production
Field B&B Evergreen Trees, White Pine Pinus strobus

Name ____________________ Date started ____________ Ended ____________

School ____________________ Genus ____________ Species ____________

County ____________________ Total receipts ____________ x

Sq. ft. of field space ____________ a Total expenses ____________ y

Total plants ____________ b Labor and Management ____________ z
(x - y = z)

No. of plants/1000 sq. ft ____________ Income/1000 sq. ft. ____________
(b ÷ a) x 1000 (z ÷ z) x 1000

	Poor	Average	Superior
1. Plants Marketed	80%	90%	95%
2. Plants/1000 sq. ft.	56	63	70
3. Years of growth to harvesting crop at 2 to 3' height	7	6	5
4. Dense and symmetrical growth	Poor	Good	Excellent
5. % Blemish Free	85%	90%	95%
6. Intense color	Poor	Good	Excellent
7. % Conforming to AAN Standard	75%	80%	90%
8. % reaching 2 - 3 ft. height, sheared, at marketing	85%	90%	95%

Place a red "G" on each line scale at goal set. Place a red "A" on each line scale at efficiency achieved.

Practices and conditions which limited the production and income:	Practices and conditions which contributed to superior efficiency:

Approved Practices - Field Grown B&B Evergreen Trees
Canada Hemlock, Tsuga canadensis

Practice	Reference
1. Block planning, species selection, site and soil selection, and crop rotation	P. 35-43, 105-106, 203
2. Soil preparation	P. 107-109
3. Lining out and planting	P. 109-112
4. Watering	P. 112
5. Fertilizing	P. 114-117
6. Pest control (weeds, insects, and disease)	P. 121-127
7. Pruning, supporting, and root pruning	P. 117-121
8. Digging	P. 134-138
9. Grading and market preparation	P. 139-141, 178-187

Reference: NURSERY PRODUCTION - A STUDENT HANDBOOK, PSU, 1971

Goals Stated in Relation to Efficiency
Canada Hemlock, Tsuga canadensis

Nursery Production - Field Grown
Evergreen Trees

Efficiency Factors	Efficiency Standards Average	 Superior
1. % Marketed	90%	95%
2. No. of plants per 1000 sq. ft.	63	70
3. Years of growth to marketing a 3-4' sheared plant	6	5
4. Dense and symmetrical growth	Good	Excellent
5. % Blemish free	90%	95%
6. Intense color	Good	Excellent
7. % Conforming to AAN Standard	80%	90%

Contest	Efficiency Factors	Min. Efficiency Level for Determining Score (average)	Max. Efficiency Level for Determining Score (superior)	Method
B & B Evergreen Trees, Canada Hemlock Tsuga canadensis	a. % Marketed	90%	95%	.1 point over 90%
	b. % of crop reaching 4-5' height or better	90%	95%	.1 point over 90%
	c. Number of plants per 1000 sq. ft.	63	70	.015 poi 1000 sq. to excee
	d. Years of plants growth to market at 3-4' sheared plant*	6	5	.5 point 6 months 6 years
	e. % Blemish free (free from insects, diseases and mech. injury	90%	95%	.1 point over 90%
	f. % Conforming to AAN Standard	80%	90%	.05 poi over 80%

* Years of growth must include age of liners plus years of growth in the fiel

cy Factors	Min. Efficiency Level for Determining Score (average)	Max. Efficiency Level for Determining Score (superior)	Method for Determining Score
rketed	90%	95%	.1 point for every % point over 90%
crop reaching height or better	90%	95%	.1 point for every % point over 90%
er of plants per sq. ft.	63	70	.015 point for each plant/ 1000 sq. ft. over 63 - not to exceed 70/1000 sq. ft.
s of plants growth arket at 3-4' red plant*	6	5	.5 points for every (six) 6 months harvesting before 6 years
emish free e from insects, ases and mech. ry	90%	95%	.1 point for every % point over 90%
nforming to AAN dard	80%	90%	.05 point for every % point over 80%

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s of growth must include age of liners plus years of growth in the field.

Cost Accounting - Nursery Production
Field Grown Evergreen Trees, Canada Hemlock, Tsuga canadensis

1. Cost of lining out stock from $6 to 35¢ per plant. Use actual price paid.
2. Cost of land 1000 sq. ft.
3. Cost of labor chargeable to this crop, about $167 per 1000 sq. ft.
4. Overhead (supplies, equipment) per 1000 sq. ft.
5. Marketing cost - about 20% of sum of all other costs.

Analysis of Nursery Production
Field B&B Evergreen Trees, Canada Hemlock, Tsuga canadensis

Name____________________ Date started__________ Ended__________

School____________________ Genus__________ Species__________

County____________________ Total receipts____________________x

Sq. ft. of field space__________a Total expenses____________________y

Total plants________________b Labor and Management________________z
(x - y = z)

No. of plants/1000 sq. ft.__________ Income/1000 sq. ft.________________
(b ÷ a) x 1000 (z ÷ a) x 1000

	Poor	Average	Superior
1. % Plants Marketed	80%	90%	95%
2. Plants/1000 sq. ft.	56	63	70
3. Years of growth to harvesting crop	7	6	5
4. Dense and symmetrical growth	Poor	Good	Excellent
5. % Blemish free	85%	90%	95%
6. Intensity of color	Poor	Good	Excellent
7. % Conforming to AAN Standard	75%	80%	90%
8. % Reaching 3-4 ft. height, sheared, at marketing	85%	90%	95%

Place a red "G" on each line scale at goal set. Place a red "A" on each line scale at efficiency achieved.

Practices and conditions which limited the production and income:	Practices and conditions which contributed to superior efficiency:
________________	________________
________________	________________
________________	________________

Approved Practices - Field Grown B&B and Bare Root
Deciduous Ornamental Trees
Flowering Crabapple, Malus cultivars

Practice	Reference
1. Block planning, species selection, site and soil selection, and crop rotation	P. 35-43, 105-106 203
2. Soil preparation	P. 107-109
3. Lining out and planting	P. 109-113, 129
4. Watering	P. 112
5. Fertilizing	P. 114-117
6. Pest control (weeds, insect, disease)	P. 121-127
7. Pruning, supporting, and root pruning	P. 117-121
8. Digging	P. 134-138
9. Grading and market preparation	P. 139-141, 178-187

Reference: NURSERY PRODUCTION - A STUDENT HANDBOOK, PSU, 1971

Goals Stated in Relation to Efficiency
Flowering Crabapple, Malus cultivars

Nursery Production - Field Grown
B&B and Bare Root Ornamental Trees

	Efficiency Standards	
Efficiency Factors	Average	Superior
1. % Marketed	90%	95%
2. No. of plants/1000 sq. ft.	63	70
3. Years of plant growth to marketing a 1 1/2" caliper plant	5	4
4. Symmetrical branching	Good	Excellent
5. Blemish free trees	90%	95%
6. % Conforming to AAN Standard	80%	90%

Contest	Efficiency Factors	Min. Efficiency Level for Determining Score (average)	Max. Efficiency Level for Determining Score (superior)	M
Field Grown B&B and Bare Root Deciduous Ornamental Trees Flowering Crabapple Malus cultivars	a. % Marketed	90%	95%	.1 ove
	b. % of crop reaching 2" caliper at harvesting	90%	95%	.1 ove
	c. Number of plants per 1000 sq. ft.	63	70	.01 ove 70
	d. * Years of plants growth to market at 1 1/2" caliper	5	4	.5 mor 5
	e. % blemish free trees (free of insect, disease, and mechanical injury	90%	95%	.1 ove
	f. % Conforming to AAN Standard	80%	90%	.05 ove

* Plant growth must include age of liner plus years of growth in the fie

ency Factors	Min. Efficiency Level for Determining Score (average)	Max. Efficiency Level for Determining Score (superior)	Method for Determining Score
arketed	90%	95%	.1 point for every % point over 90
f crop reaching caliper at rvesting	90%	95%	.1 point for every % point over 90
ber of plants r 1000 sq. ft.	63	70	.015 point for every plant over 63 - not to exceed 70 plants/1000 sq. ft.
ears of plants wth to market 1 1/2" caliper	5	4	.5 points for every six months harvested before 5 years
lemish free trees ee of insect, sease, and hanical injury	90%	95%	.1 point for every % point over 90
onforming to AAN ndard	80%	90%	.05 point for every % point over 80

t growth must include age of liner plus years of growth in the field.

Cost Accounting - Nursery Production Field Grown B&B and Bare Root Deciduous Ornamental Trees, Flowering Crabapple, Malus cultivars

1. Cost of grafted lining out stock about 35¢ per plant. Use actual price paid.

2. Cost of land 1000 sq. ft.

3. Cost of labor chargeable to this crop, about $167 per 1000 sq. ft.

4. Overhead (supplies, equipment) per 1000 sq. ft.

5. Marketing cost - about 20% of sum of all other costs.

Analysis of Field Grown B&B and Bare Root Ornamental Flowering Crabapple, Malus cultivars

Name ______________________ Date started __________ Ended __________

School ______________________ Genus __________ Species __________

County ______________________ Total Receipts ______________________ x

Sq. ft. used ______________ a Total Expenses ______________________ y

No. sold B&B ______________ b Labor - Mgmt. Income ______________ z
(x - y = z)

No. sold Bare Root __________ c Income/1000 sq. ft. ______________
(z ÷ a) x 1000

No. per 1000 sq. ft. __________
(b + c ÷ a) x 1000

Poor	Average	Superior

1.
80% 90% 100%
% Marketed

2.
85% 90% 95%
% of crop reaching 2" caliper at harvest

3.
6 5 4
Years of growth to reach 1 1/2" caliper

4.
56 63 70
No. Plants per 1000 sq. ft.

5.
Poor Good Excellent
Symmetrical Branching

6.
80% 90% 95%
% Blemish Free

7.
70% 80% 90%
% Conforming to AAN Standard

Place a red "G" on each line scale at goal set. Place a red "A" on each line scale at efficiency achieved.

Practices and conditions which limited the production and income:	Practices and conditions which contributed to superior efficiency:
______________________	______________________
______________________	______________________
______________________	______________________

Approved Practices - Field Grown B&B Deciduous Ornamental Trees
Japanese Maple Acer palmatum

Practice	Reference
1. Block planning, species selection, site and soil selection, and crop rotation	P. 35-43, 105-106, 203
2. Soil preparation	P. 107-109
3. Lining out and planting	P. 109-112, 129
4. Watering	P. 112
5. Fertilizing	P. 114-112
6. Pest control (weeds, insect, disease)	P. 121-127
7. Pruning, supporting, root pruning	P. 117-121
8. Digging	P. 134-138
9. Grading and market preparation	P. 139-141, 178-187

Reference - NURSERY PRODUCTION - A STUDENT HANDBOOK, PSU, 1971

Goals Stated in Relation to Efficiency
Japanese Maple, Acer palmatum

Nursery Production, Field Grown
B&B Ornamental Trees

Efficiency Factors	Efficiency Standards Average	 Superior
1. % Marketed	90%	95%
2. Years of plant growth to marketing at 1" caliper	6	5
3. No. of plants/1000 sq. ft.	63	70
4. Symmetrical branching	Good	Excellent
5. Blemish free trees	90%	95%
6. % conforming to AAN Standard	80%	90%

Contest	Efficiency Factor	Min. Efficiency Level for Determining Score (average)	Max. Efficiency Level for Determining Score (superior)	Meth
Field Grown B&B Deciduous Ornamental Trees Japanese Maple Acer palmatum	a. % Marketed	90%	95%	.1 poin over 90
	b. Number of plants per 1000 sq. ft.	63	70	.015 po 1000 sq to exce sq. ft.
	c. % of crop reaching a 1" caliper or better	90%	95%	.1 poin
	d. Years of plants growth to market a 1" caliper tree (base measurement)*	6 yrs.	5 yrs.	.5 poin vested
	e. % Unblemished trees (free of insect, disease, and mechanical injury)	90%	95%	.1 poin above 9
	f. % Conforming to AAN Standard	80%	90%	.05 poi above 8

* Plant growth must include age of liner plus years of growth in the field.

ency Factor	Min. Efficiency Level for Determining Score (average)	Max. Efficiency Level for Determining Score (superior)	Method of Determining Score
Marketed	90%	95%	.1 point for every % point over 90%
nber of plants per 00 sq. ft.	63	70	.015 point for every plant/1000 sq. ft. over 63 - not to exceed 70 plants/1000 sq. ft.
of crop reaching " caliper or better	90%	95%	.1 point for each 1% above 90%
rs of plants growth market a 1" caliper e (base measurement)*	6 yrs.	5 yrs.	.5 point for every 1 year harvested before 6 years
Unblemished trees ee of insect, ease, and mechani- injury)	90%	95%	.1 point for each % point above 90%
Conforming to AAN ndard	80%	90%	.05 point for each % point above 80%

t growth must include age of liner plus years of growth in the field.

Cost Accounting - Nursery Production
Field Grown B&B Deciduous Ornamental Trees, Japanese Maple, *Acer palmatum*

1. Cost of grafted lining out stock about 35¢ per plant. Use actual price paid.
2. Cost of land about $98 per 1000 sq. ft.
3. Cost of labor chargeable to this crop, about $167 per 1000 sq. ft.
4. Overhead (supplies, equipment) per 1000 sq. ft.
5. Marketing cost - about 20% of sum of all other costs.

Analysis of Field Grown B&B Ornamental Trees
Japanese Maple, Acer palmatum

Name____________________ Date started________ Ended________

School____________________ Genus________ Species________

County____________________ Total Receipts________________ x

Sq. ft. used________________ a Total Expenses________________ y

No. sold B&B________________ b Labor-Mgmt. Income______________ z
(x − y = z)

No. sold Bare Root____________ c Income/1000 sq. ft.______________
(z ÷ a) x 1000

No. per 1000 sq. ft.____________
(b + c ÷ a) x 1000

	Poor	Average	Superior
1.	80%	90% % Marketed	100%
2.	85% % of Crop Reaching 1" Caliper or Better at Harvest	90%	95%
3.	7	6 Years of Growth to Reach 1" Caliper	5
4.	56	63 No. Plants per 1000 sq. ft.	70
5.	Poor	Good Symmetrical Branching	Excellent
6.	80%	90% % Blemish Free	95%
7.	70%	80% % Conforming to AAN Standard	90%

Place a red "G" on each line scale at goal set. Place a red "A" on each line scale at efficiency achieved.

Practices and conditions which limited the production and income:	Practices and conditions which contributed to superior efficiency:
________________	________________
________________	________________
________________	________________

Approved Practices - Field Grown B&B and Bare Root
Deciduous Ornamental Trees - Kwazan Cherry, Prunus serrulata

Practice	Reference
1. Block planning, species selection, site and soil selection, and crop rotation	P. 35-43, 105-106, 203
2. Soil preparation	P. 107-109
3. Lining out and planting	P. 109-112, 129
4. Watering	P. 112
5. Fertilizing	P. 114-117
6. Pest control (weeds, insect, disease)	P. 121-127
7. Pruning, supporting, and root pruning	P. 117-121
8. Digging	P. 134-138
9. Grading and market preparation	P. 139-141, 187-187

Reference - NURSERY PRODUCTION, A STUDENT HANDBOOK, PSU, 1971.

Goals Stated in Relation to Efficiency

Nursery Production - Field Grown Ornamental Trees, Kwazan Cherry, Prunus serrulata
B&B and Bare Root

Efficiency Factors	Efficiency Standards	
	Average	Superior
1. % Marketed	90%	95%
2. Years of plant growth to marketing at 1" caliper	5	4
3. No. of plants/1000 sq. ft.	63	70
4. Symmetrical branching	Good	Excellent
5. Blemish free trees	90%	95%
6. % Conforming to AAN Standard	80%	90%

Contest	Efficiency Factors	Min. Efficiency Level for Determining Score (average)	Max. Efficiency Level for Determining Score (superior)	Ma
Field Grown B&B and Bare Root Deciduous Ornamental Trees Kwazan Cherry Prunus serrulata	a. % Marketed	90%	95%	.1 po over
	b. % of crop reaching 1" caliper at harvest	90%	95%	.1 po over
	c. Years of growth to market at 1" caliper	5	4	.5 po harve
	d. Number of plants per 1000 sq. ft.	63	70	.015 over plant
	e. % Blemish free trees (free of insect, disease, and mechanical injury)	90%	95%	.1 po over
	f. % Conforming to AAN Standard	80%	90%	.05 p over

* Plant growth must include age of liner plus years of growth in the field

iciency Factors	Min. Efficiency Level for Determining Score (average)	Max. Efficiency Level for Determining Score (superior)	Method of Determining Score
% Marketed	90%	95%	.1 point for every % point over 90%
% of crop reaching 1" caliper at harvest	90%	95%	.1 point for every % point over 90%
Years of growth to market at 1" caliper	5	4	.5 point for every 6 months harvested before 5 years
Number of plants per 1000 sq. ft.	63	70	.015 point for every plant over 63 - not to exceed 70 plants/1000 sq. ft.
% Blemish free trees (free of insect, disease, and mechanical injury)	90%	95%	.1 point for every % point over 90%
% Conforming to AAN Standard	80%	90%	.05 points for every % point over 80

Plant growth must include age of liner plus years of growth in the field.

Cost Accounting - Nursery Production
Field Grown B&B and Bare Root Deciduous Ornamental Trees,
Kwazan Cherry, Prunus serrulata

1. Cost of grafted lining out stock about 35¢ per plant. Use actual price paid.

2. Cost of land 1000 sq. ft.

3. Cost of labor chargeable to this crop, about $167 per 1000 sq. ft.

4. Overhead (supplies, equipment) per 1000 sq. ft.

5. Marketing cost - about 20% of sum of all other costs.

Analysis of Field Grown B&B and Bare Root
Deciduous Ornamental Trees, Kwazan Cherry, Prunus serrulata

Name____________ Date started______ Ended______

School____________ Genus______ Species______

County____________ Total Receipts______ x

Sq. ft. used____________ a Total Expenses______ y

No. sold B&B____________ b Labor-Mgnt. Income______ z
(x - y = z)

No. sold Bare Root____________ c Income/1000 sq. ft.______
(z ÷ a) x 1000

No. per 1000 sq. ft.______
(b + c ÷ a) x 1000

	Poor	Average	Superior
1. % Marketed	80%	90%	100%
2. % of Crop Reaching 1" Caliper or Better at Harvest	85%	90%	95%
3. Years of Growth to Reach 1" Caliper	6	5	4
4. No. Plants per 1000 sq. ft.	56	63	70
5. Symmetrical Branching	Poor	Good	Excellent
6. % Blemish Free	80%	90%	95%
7. % Conforming to AAN Standard	70%	80%	90%

Place a red "G" on each line scale at goal set. Place a red "A" on each line scale at efficiency achieved.

Practices and conditions which limited the production and income:	Practices and conditions which contributed to superior efficiency:
______	______
______	______
______	______

Approved Practices - Field Grown B&B Deciduous Ornamental Trees
Flowering Dogwood, Cornus florida

Practice	Reference
1. Block planning, species selection, site soil selection, and crop rotation	P. 35-43, 105-106, 203
2. Soil preparation	P. 107-109
3. Lining out and planting	P. 109-112, 129
4. Watering	P. 112
5. Fertilizing	P. 114-117
6. Pest control (weeds, insect, disease)	P. 121-217
7. Pruning, supporting, and root pruning	P. 117-121
8. Digging	P. 134-138
9. Grading and market preparation	P. 139-141, 178-187

Reference - NURSERY PRODUCTION, A STUDENT HANDBOOK, PSU, 1971

Goals Stated in Relation to Efficiency

Nursery production, Field Grown, B&B Ornamental Trees, Flowering Dogwood, Cornus Florida

Efficiency Factors	Efficiency Standards Average	 Superior
1. % Marketed	90%	95%
2. Years of plant growth to marketing at 1 1/2" caliper	6	5
3. No. of plants/1000 sq. ft.	63	70
4. Symmetrical branching	Good	Excellent
5. Blemish free trees	90%	95%
6. % conforming to AAN Standard	80%	90%

Contest	Efficiency Factors	Min. Efficiency Level for Determining Score (average)	Max. Efficiency Level for Determining Score (superior)	Meth
Field Grown B&B Deciduous Ornamental Trees Flowering Dogwood Cornus florida	a. % Marketed	90%	95%	.1 poin over 90
	b. % of crop reaching 1 1/2" caliper or better	90%	95%	.1 poin over 90
	c. Years of plants growth to market at 1 1/2" caliper*	6	5	.5 poin harvest
	d. Number of plants per 1000 sq. ft.	63	70	.015 po 1000 sq point t
	e. % Blemish free trees (free of insect, disease, and mech. injury)	90%	95%	.1 poin over 90
	f. % Conforming to AAN Standard	80%	90%	.05 poi

* Plant growth must include age of liner plus years of growth in the field.

ency Factors	Min. Efficiency Level for Determining Score (average)	Max. Efficiency Level for Determining Score (superior)	Method of Determining Score
Marketed	90%	95%	.1 point for every % point over 90%
of crop reaching 1/2" caliper or tter	90%	95%	.1 point for every % point over 90%
ars of plants growth market at 1 1/2" liper*	6	5	.5 point for every 5 months harvest before 6 years
mber of plants per 00 sq. ft.	63	70	.015 point for every plant/ 1000 sq. ft. over 63 - max. point total 1.05
Blemish free trees ree of insect, sease, and mech. jury)	90%	95%	.1 point for every % point over 90%
Conforming to AAN andard	80%	90%	.05 point for every 1% over 80%

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nt growth must include age of liner plus years of growth in the field.

Cost Accounting - Nursery Production
Field Grown B&B Deciduous Ornamental Trees, Flowering Dogwood, Cornus florida

1. Cost of lining out stock or grafts from 5¢ to 35¢ per plant. Use actual price paid.

2. Cost of land, per 1000 sq. ft.

3. Cost of labor chargeable to this crop, about $167 per 1000 sq. ft.

4. Overhead (supplies, equipment) per 1000 sq. ft.

5. Marketing cost - about 20% of sum of all other costs.

Analysis of Field Grown B&B Ornamental Trees
Flowering Dogwood, Cornus florida

Name ______________________ Date started __________ Ended __________

School ______________________ Genus __________ Species __________

County ______________________ Total Receipts __________ x

Sq. ft. used ______________________ a Total Expenses __________ y

No. sold B&B ______________________ b Labor-Mgmt. Income __________ z
(x - y = z)

No. sold Bare Root ______________________ c Income/1000 sq. ft. __________
(z ÷ a) x 1000

No. per 1000 sq. ft. __________
(b + c ÷ a) x 1000

	Poor	Average	Superior
1.	80%	90%	100%
		% Marketed	
2.	85%	90%	95%
	% of Crop Reaching 1 1/2" Caliper or Better at Harvest		
3.	7	6	5
		Years of Growth to Reach 1 1/2" Caliper	
4.	56	63	70
		No. Plants per 1000 sq. ft.	
5.	Poor	Good	Excellent
		Symmetrical Branching	
6.	8[illegible]	90%	95%
		% Blemish Free	
7.	70%	80%	90%
		% Conforming to AAN Standard	

Place a red "G" on each line scale at goal set. Place a red "A" on each line scale at efficiency achieved.

Practices and conditions which limited the production and income:	Practices and conditions which contributed to superior efficiency:
______________________	______________________
______________________	______________________
______________________	______________________

Prepared by The Department of Agricultural Education, The Pennsylvania State University, in cooperation with the Pennsylvania Department of Education and Pennsylvania Vocational Agriculture Teachers. 1974

Supervised Occupational Experience Record Forms
for
Ornamental Horticulture
(Revised)
1974

NURSERY PRODUCTION - FIELD GROWN SHRUBS - E 71-138

Convexleaf Holly	E	71-78	Pfitzer Juniper	E	101-106
Hybrid Rhoddoendron	E	79-83	Dwarf Bruning Bush	E	107-112
Mugo Pine	E	84-88	Forsythia	E	113-118
American Arborvitae	E	89-94	Lilac	E	119-124
Spreading Yew	E	95-100	Mockorange	E	125-130
			Viburnum	E	131-137

To be used with any production, occupational
or work experience record book.

Department of Agricultural Education
The Pennsylvania State University
in cooperation with
Bureau of Vocational Education
Pennsylvania Department of Education

Using The Forms

The five record sheets included in this unit are intended to be used with any production, occupational or work experience record book for high school vocational agriculture programs.

Approved Practices gives specific references to production or service practices that are generally accepted in industry as giving superior results if appropriately applied. A particular business firm might use variations of some of these practices because of unusual local conditions. Students carrying out production projects should find these references especially helpful. Students in agricultural production or services work experience will find them useful guides to what will be expected of them on the job.

Goals are stated in relation to efficiency. They are drawn up on the basis of comparisons of superior achievement with average achievement. The goals given are considered realistic in terms of production enterprises or work experience in production or services occupations. Successful businesses rank somewhere between "average" and superior" in their goals.

The Efficiency Factor form provides a means for giving a numerical score on goal achievement. It is equally applicable to production enterprises, production occupations or service occupations. The scores are used as one base for comparisons in the judging of record books in regional and state record book contests.

Cost Accounting record forms serve as a guide for calculating the costs and profit in a production enterprise or a production experience. These figures, together with production figures are used in the analysis of the enterprise.

The Employment Achievement form is used in place of the Cost Accounting form when the experiences involve employment in a service occupation rather than production occupation.

The Analysis form should be marked at the beginning of the experience program with a "G" to indicate the goal that a student has set for himself. The same scales are marked with an "A" to indicate actual achievement at the end of the experience program. The analysis sheet provides for an evaluation of the approved practices used and their relationship to production or service and income.

Example of the Use of Efficiency Factors and Production Goals

The Pennsylvania Agricultural Production Program Record Book provides space for the student to list appropriate efficiency factors for each productive enterprise. In the example below, the figures in the column "Local Efficiency Standards" will have been obtained through group study by the students with the help of the teacher. An analysis of records of similar enterprises completed in previous years by students in the same school will also serve as a guide.

PRODUCTION GOALS: Potted Chrysanthemum ENTERPRISE

Efficiency Factor	Local Efficiency Standards		Student Goal	Student Achievement
Percent marketed	95%	100%	100%	95%
No. of 6" pots per 100 sq. ft. of bench space	75	100*	100	98
No. of blooms/6" pot	18	24	24	22
Percent of pots in 16" to 18" height range including pot marketed	90%	95%	95%	92%

* Optimum number

Approved Practices - Field Grown B&B Evergreen Shrubs
Convexleaf Holly, Ilex crenata convexa

Practice	Reference
1. Block planning, species selection, site and soil selection, and crop Rotation	P. 35-43, 105-106, 203
2. Soil preparation	P. 107-109
3. Lining out and planting	P. 109-112, 130
4. Watering	P. 112
5. Fertilizing	P. 114-117
6. Pest control (weeds, insects, and disease)	P. 121-127
7. Pruning, supporting, and root pruning	P. 117-121
8. Digging	P. 134-138
9. Grading and market preparation	P. 139-141, 178-187

Reference: NURSERY PRODUCTION, A STUDENT HANDBOOK, PSU 1971

Goals Stated in Relation to Efficiency

Field Grown B&B Exergreen Shrubs,
Convexleaf Holly, Ilex crenata convexa

Efficiency Factors	Efficiency Standards	
	Average	Superior
1. Percent marketed		
2. Years of growth to market a 24" to 30" plant	90%	95%
3. No. of plants per 1,000 sq. ft.	4	3
4. Dense and symmetrical growth	Good	Excellent
5. Blemish free	90%	95%
6. Intense color	Good	Excellent
7. Percent conforming to AAN Standard	80%	90%

Contest	Efficiency Factors	Min. Efficiency Level for Determining Score (average)	Max. Efficiency Level for Determining Score (superior)
Field Grown B&B Evergreen Shrubs, Convexleaf Holly, Ilex crenata convexa	a. Percent marketed	90%	95%
	b. Years of plants growth to market (24-30") *	4	3
	c. Percent of plants reaching 24" to 30" market class at harvest	90%	95%
	d. No. of plants per 1,000 sq. ft.	125	140
	e. Percent blemish free (free of insect disease and mech. injury)	90%	95%
	f. Percent conforming to AAN Standard	80%	90%

* Plant growth must include age of liner plus years of growth in the field.

iciency Factors	Min. Efficiency Level for Determining Score (average)	Max. Efficiency Level for Determining Score (superior)	Method for Determining Score
Percent marketed	90%	95%	.1 point for every % over 90
Years of plants growth to market (24-30") *	4	3	.5 point for every 6 months harvested before 4 years
Percent of plants reaching 24" to 30" market class at harvest	90%	95%	.1 point for every % point over 90
No. of plants per 1,000 sq. ft.	125	140	.035 point for every plant over 125--not to exceed 140 plants/ 1,000 sq. ft.
Percent blemish free (free of insect disease and mech. injury)	90%	95%	.1 point for every % point over 90
Percent conforming to AAN Standard	80%	90%	.05 point for every % point over 80

include age of liner plus years of growth in the field.

Cost Accounting - Nursery Production
Field Grown B&B Evergreen Shrubs, Convexleaf Holly, *Ilex crenata convexa*

1. Cost of lining out Stock from 5¢ to 35¢ per plant. Use actual price paid.

2. Cost of land per 1,000 sq. ft.

3. Cost of labor chargeable to this crop, average $167 per 1,000 sq. ft.

4. Overhead (supplies, equipment) per 1,000 sq. ft.

5. Marketing cost - average 20% of sum of all other costs.

Analysis of Field Grown B&B Evergreen Shrubs,
Convexleaf Holly, Ilex crenata convexa

Name ______________________________

School ______________________________

County ______________________________

Sq. ft. used ______________________ a

No. sold ______________________ b

No. per 1,000 sq. ft. ____________
(b ÷ a) × 1,000

Date started ________ Ended ________

Genus __________ Species __________

Total Receipts ____________________ x

Total Expenses ____________________ y

Labor-Mgmt. Income ________________ z
(x - y = z)

Income/1,000 sq. ft. ______________
(z ÷ a) × 1,000

	Poor	Average	Superior	
1.	80%	90%	100%	% Marketed
2.	5	4	3	Years of Growth Until Marketed
3.	85%	90%	95%	% of Plants Reaching 24"-30" Grade at Harvest
4.	110	125	140	No. Plants per 1,000 sq. ft.
5.	Poor	Good	Excellent	Dense and Symmetrical Growth
6.	80%	90%	95%	% Blemish Free
7.	Poor	Good	Excellent	Color Intensity
8.	70%	80%	90%	% Conforming to AAN Standard

Place a red "G" on each line scale at goal set. Place a red "A" on each line scale at efficiency achieved.

Practices and/or conditions which limited the production and income.

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Practices and conditions which contributed to superior efficiency.

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Approved Practices - Field Grown B&B Evergreen Shrubs
Hybrid Rhododendron - Catawbiense

PRACTICE	REFERENCE
1. Block planning, species selection, site and soil selection, and crop rotation	P. 35-43, 105-106, 203
2. Soil preparation	P. 107-109
3. Lining out and planting	P. 109-112, 130
4. Watering	P. 112
5. Fertilizing	P. 114-117
6. Pest control (weeds, insects, and disease)	P. 121-127
7. Pruning, supporting, and root pruning	P. 117-121
8. Digging	P. 137-138
9. Grading and market preparation	P. 139-141, 178-181

Reference: NURSERY PRODUCTION, A STUDENT HANDBOOK, PSU, 1971

Goals Stated in Relation to Efficiency

Field Grown B&B Evergreen Shrubs,
Hybrid Rhododendron, Catawbiense

Efficiency Sactors	Efficiency Standards	
	Average	Superior
1. Percent marketed	90%	95%
2. Years of growth to market an 18" to 24" plant	5	3
3. No. of plants per 1,000 sq. ft.	125	140
4. Dense and symmetrical growth	Good	Excellent
5. Blemish free	90%	95%
6. Intense color	Good	Excellent
7. Percent conforming to AAN Standard	Good	Excellent

Contest	Efficiency Factors	Min. Efficiency Level for Determining Score (average)	Max. Efficiency Level for Determining Score (superior
Field Grown B&B Evergreen Shrubs, Hybrid Rhododendron, Catawbiense	a. Percent marketed	90%	95%
	b. Years of plants growth to market 18"-24" *	5	3
	c. Percent of plants reaching 18"-24" market class at harvest	90%	95%
	d. No. of plants per 1,000 sq. ft.	125	140
	e. Dense and symmetrical	Good (90)	Excellent (100)
	f. Percent blemish free (free of disease, insect, and mech. injury)	90%	95%
	g. Percent conforming to AAN Standard	80%	90%

* Plant growth must include age of liner plus years of growth in the field.

ncy Factors	Min. Efficiency Level for Determining Score (average)	Max. Efficiency Level for Determining Score (superior	Method for Determining Score
ent marketed	90%	95%	.1 point for every % point over 90
s of plants growth arket 18"-24" *	5	3	.5 point for every 6 months harvested before 5 years
ent of plants reaching 24" market class at est	90%	95%	.1 point for every % point over 90
of plants per 1,000 ft.	125	140	.035 points for every plant over 125--not to exceed 14- plants/1,000 sq. ft.
e and symmetrical	Good (90)	Excellent (100)	.05 point for every point over 90
ent blemish free e of disease, insect, mech. injury)	90%	95%	.1 point for every % point over 90
ent conforming to Standard	80%	90%	.05 point for every % point over 80

ude age of liner plus years of growth in the field.

Cost Accounting - Nursery Production
Field Grown B&B Evergreen Shrubs, Hybrid Rhododendron, Catawbiense

1. Cost of lining out stock from 5¢ to 35¢ per plant. Use actual price paid.
2. Cost of land per 1,000 sq. ft.
3. Cost of labor chargeable to this crop, averages $167 per 1,000 sq. ft.
4. Overhead (supplies, equipment) per 1,000 sq. ft.
5. Marketing cost - average 20% of sum of all other costs.

Analysis of Field Grown B&B Evergreen Shrubs, Hybrid Rhododendron, Catawbiense

Name ____________________ Date started ________ Ended ________

School ____________________ Genus ________ Species ________

County ____________________ Total Receipts ____________ x

Sq. ft. used ____________ a Total Expenses ____________ y

No. sold ____________ b Labor-Mgmt. Income ____________ z
(x - y = z)

No. per 1,000 sq. ft. ____________
(b ÷ a) x 1,000

Income/1,000 sq. ft. ____________
(z ÷ a) x 1,000

Poor Average Superior

1. 80% ____________ 90% ____________ 100%
% Marketed

2. 6 ____________ 5 ____________ 4
Years of Growth Until Marketed

3. 85% ____________ 90% ____________ 95%
% of Plants Reaching 18"-24" Grade at Harvest

4. 110 ____________ 125 ____________ 140
No. Plants per 1,000 sq. ft.

5. Poor ____________ Good ____________ Excellent
Dense and Symetrical Growth

6. 80% ____________ 90% ____________ 95%
% Blemish Free

7. 70% ____________ 80% ____________ 90%
% Conforming to AAN Standard

Place a red "G" on each line scale at goal set. Place a red "A" on each line scale at efficiency achieved.

Practices and/or conditions which limited the production and income:

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____
____

Practices and conditions which contributed to superior efficiency:

____
____
____

Approved Practices - Field Grown B&B Evergreen Shrubs
Mugho Pine - Pinus mugo mugo

PRACTICE	REFERENCE
1. Block planning, species selection, site and soil selection, and crop rotation	P. 35-43, 105-106, 203
2. Soil preparation	P. 107-109
3. Lining out and planting	P. 109-112, 130
4. Watering	P. 112
5. Fertilizing	P. 114-117
6. Pest control (weeds, insects, and disease)	P. 121-127
7. Pruning, supporting, and root pruning	P. 117-121
8. Digging	P. 134-138
9. Market preparation	P. 139-141, 178-181

Reference: NURSERY PRODUCTION, A STUDENT HANDBOOK, PSU 1971

Goals Stated in Relation to Efficiency

Field Grown B&B Evergreen Shrubs
Mugho Pine, Pinus mugo mugo

Efficiency Factors	Efficiency Standards Average	Efficiency Standards Superior
1. Percent Marketed	90%	95%
2. Years of Growth to Market a 12" to 18" plant	6	5
3. No. of plants per 1,000 sq. ft.	125	140
4. Dense and Symmetrical Growth	Good	Excellent
5. Blemish Free	90%	95%
6. Intense Color	Good	Excellent
7. Percent Conforming to AAN Standard	80%	90%

Contest	Efficiency Factors	Min. Efficiency Level for Determining Score (average)	Max. Efficiency Level for Determinin Score (superior)
Field Grown B&B Evergreen Shrubs, Mugho Pine, Pinus mugo mugo	a. Percent marketed	90%	95%
	b. Years of plants growth to market (12"-18") *	6	5
	c. Percent of plants reaching 12"-18" market class at harvest	90%	95%
	d. No. of plants per	125	140
	e. Percent blemish free trees (free of insect, disease, and mech. injury)	90%	95%
	f. Color intensity	Good (90)	Excellent (100)
	g. Percent conforming to AAN Standard	80%	90%

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* Plant growth must include age of liner plus years of growth in the fi

ncy Factors	Min. Efficiency Level for Determining Score (average)	Max. Efficiency Level for Determining Score (superior)	Method for Determining Score
ent marketed	90%	95%	.1 point for every % point over 90
s of plants growth arket (12"-18") *	6	5	.5 point for every 6 months harvested before 6 years
ent of plants hing 12"-18" et class at est	90%	95%	.1 point for every % point over 90
of plants per	125	140	.035 point for every plant over 125-not to exceed 140 plants/sq. ft.
ent blemish free s (free of insect, ase, and mech. injury)	90%	95%	.1 point for every % point over 90
r intensity	Good (90)	Excellent (100)	.05 point for every point over 90
ent conforming to Standard	80%	90%	.05 point for every % point over 80

growth must include age of liner plus years of growth in the field.

Cost Accounting - Nursery Production
Field Grown B&B Evergreen Shrubs,
Mugho Pine, Pinus mugo mugo

1. Cost of lining out grafts about 35¢ per plant. Use actual price paid.

2. Cost of land per 1,000 sq. ft.

3. Cost of labor chargeable to this crop, average $167 per 1,000 sq. ft.

4. Overhead (supplies, equipment) per 1,000 sq. ft.

5. Marketing cost - averages 20% of sum of all other costs.

Analysis of Field Grown B&B Evergreen Shrubs
Mugho Pine, Pinus mugo mugo

Name ______________________

School ______________________

County ______________________

Sq. ft. used ______________________ a

No. sold ______________________ b

No. sold bare root ______________________

No. per 1,000 sq. ft. ______________________
(b ÷ a) × 1,000

Date started ________ Ended ________

Genus ________ Species ________

Total Receipts ______________________ x

Total Expenses ______________________ y

Labor-Mgmt. Income ______________________ z
(x − y = z)

Income/1,000 sq. ft. ______________________
(z ÷ a) × 1,000

	Poor	Average	Superior
1. % Marketed	80%	90%	100%
2. Years of Growth Until Marketed	6	5½	5
3. % of Plants Reaching 12"-18" Grade at Harvest	85%	90%	95%
4. No. Plants per 1,000 sq. ft.	110	125	140
5. Symmetrical Branching	Poor	Good	Excellent
6. % Blemish Free	80%	90%	95%
7. Color Intensity	Poor	Good	Excellent
8. % Conforming to AAN Standard	70%	80%	90%

Place a red "G" on each line scale at goal set. Place a red "A" on each line scale at efficiency achieved.

Practices and/or conditions which limited the production and income:

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Practices and conditions which contributed to superior efficiency:

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Approved Practices - Field Grown B&B Evergreen Shrubs
American Arborvitae - Thuja occidentalis

PRACTICE	REFERENCE
1. Block planning, species, selection, site and soil selection, and crop rotation	P. 35-43, 105-106
2. Soil preparation	P. 107-109
3. Lining out and planting	P. 109-112, 130
4. Watering	P. 112
5. Fertilizing	P. 114-117
6. Pest control (weeds, insects, and disease)	P. 121-127
7. Pruning, supporting, and root pruning	P. 117-121
8. Digging	P. 134-138
9. Grading and market preparation	P. 139-141, 178-187

Reference: NURSERY PRODUCTION, A STUDENT HANDBOOK, PSU 1971

Goals Stated In Relationship to Efficiency

Field Grown B&B Evergreen Shrubs,
American Arborvitae, Thuja occidentalis

Efficiency Factors	Efficiency Standards	
	Average	Superior
1. % Marketed	90%	95%
2. Years of growth to market a 36"-48" plant	5	3
3. No. of plants per 1,000 sq. ft.	125	140
4. Dense and symmetrical growth	Good	Excellent
5. Blemish free	90%	95%
6. Intense color	Good	Excellent
7. % Conforming to AAN Standard	80%	90%

Contest	Efficiency Factors	Min. Efficiency Level for Determining Score (average)	Max. Efficiency Level for Determini Score (superior)
B&B Evergreen Shrubs American Arborvitae Thuja occidentalis	a. % Marketed	90	95
	b. Years of plants growth to market 36"-48" *	5 7	3
	c. % of plants reaching 36"-48" market class at harvest	90	95
	d. Number of plants per 1000 sq. ft.	125	140
	e. % Blemish free trees (free of insect, disease, and mech. injury)	90	95
	f. Color intensity	Good (90)	Excellent (100)
	g. % Conforming to AAN Standard	80	90

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* Plant growth must include age of liner plus years of growth in the fiel

ency Factors	Min. Efficiency Level for Determining Score (average)	Max. Efficiency Level for Determining Score (superior)	Method for Determining Score
arketed	90	95	.1 point for every % over 90
rs of plants growth market 36"-48" *	5	3	.5 point for every 6 months harvesting before 6 years
f plants reaching 36"-48" ket class at harvest	90	95	.1 point for every % point over 90
ber of plants per 1000 ft.	125	140	.035 point for every plant over 125-not to exceed 140 plants/1000 sq. ft.
lemish free trees (free insect, disease, and mech. ury)	90	95	.1 point for every plant over 125-not to exceed 140 plants/1000 sq. ft.
or intensity	Good (90)	Excellent (100)	.05 point for every point over 90
onforming to AAN Standard	80	90	.05 point for every % over 80

t growth must include age of liner plus years of growth in the field.

Cost Accounting - Nursery Production
Field Grown B&B Evergreen Shrubs, American Arborvitae, Thuja occidentalis

1. Cost of lining out stock from 5¢ to 35¢ per plant. Use actual price paid.

2. Cost of land averages $98 per 1000 sq. ft.

3. Cost of labor chargeable to this crop, averages $167 per 1000 sq. ft.

4. Overhead (supplies, equipment) per 1000 sq. ft.

5. Marketing cost - average 20% of sum of all other costs.

Analysis of Field Grown B&B Evergreen Shrubs
American Arborvitae, Thuja occidentalis

Name__________ Date Started__________ Ended__________

School__________ Genus__________ Species__________

County__________ Total Receipts__________

Sq. ft. used__________ a Total Expenses__________ y

No. sold__________ b Labor-Management Income__________ z
(x - y = z)

No. per 1000 sq. ft.__________ Income/1000 sq. ft.__________
(b ÷ a) x 1000 (z ÷ a) x 1000

	Poor	Average	Superior
1. % Marketed	80%	90%	100%
2. Years of growth until marketed	7	5	3
3. % of plants reaching 36-48" grade at harvest	85%	90%	95%
4. No. plants per 1000 sq. ft.	110	125	140
5. Symmetrical branching	Poor	Good	Excellent
6. % Blemish free	80%	90%	95%
7. % Conforming to AAN Standard	70%	80%	90%

Place a red "G" on each line scale at goal set. Place a red "A" on each line scale at efficiency achieved.

Practices and/or conditions which limited the production and income:

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Practices and conditions which contributed to superior efficiency:

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Approved Practices - Field Grown B&B Evergreen Shrubs
Spreading Yew, Taxus cuspidata

PRACTICE	REFERENCE
1. Block planning, species selection, site and soil selection, and crop rotation	P. 35-43, 105-106, 203
2. Soil preparation	P. 107-109
3. Lining out and planting	P. 109-112, 130
4. Watering	P. 112
5. Fertilizing	P. 114-117
6. Pest control (weeds, insects, and disease)	P. 121-127
7. Pruning, supporting, and root pruning	P. 117-121
8. Digging	P. 134-138
9. Grading and market preparation	P. 139-141, 178-187

Reference: NURSERY PRODUCTION, A STUDENT HANDBOOK, PSU 1971

Goals Stated in Relation to Efficiency

B&B Evergreen Shrubs,
Spreading Yew, Taxus cuspidata

Efficiency Factors	Efficiency Standards Average	Superior
1. % Marketed	90%	95%
2. Years of growth to market a 24"-36" sheared plant	5 125	3 140
3. No. of plants per 1000 sq. ft.	125	140
4. Dense and symmetrical growth	Good	Excellent
5. Blemish free	90%	95%
6. Intense color	Good	Excellent
7. % Conforming to AAN Standard	80%	90%

Contest	Efficiency Factors	Min. Efficiency Level for Determining Score (average)	Max. Efficiency Level for Determini Score (suprioor
B&B Evergreen Shrubs Spreading Yew Taxus cuspidata	a. % Marketed	90%	95%
	b. Years of plants growth to market (24"-36") *	5	3
	c. % of plants reaching 24"-36" spread at harvest, sheared	90%	95%
	d. Number of plants per 1000 sq. ft.	125	140
	e. % Blemish free trees (free of insects, disease, and mech. injury)	90%	95%
	f. Color intensity	Good (90)	Excellent (100)
	g. % Conforming to AAN Standard	80%	90%

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* Plant growth must include age of liner plus years of growth in the fiel

fficiency Factors	Min. Efficiency Level for Determining Score (average.	Max. Efficiency Level for Determining Score (suprioor	Method of Determining Score
. % Marketed	90%	95%	.1 point for every 1% point over 90
. Years of plants growth to market (24"-36") *	5	3	.5 point for every 6 months harvesting before 5 years
. % of plants reaching 24"-36" spread at harvest, sheared	90%	95%	.1 point for every % point over 90
. Number of plants per 1000 sq. ft.	125	140	.035 point for every plant over 125-not to exceed 140 plants/1000 sq. ft.
. % Blemish free trees (free of insects, disease, and mech. injury)	90%	95%	.1 point for every % point over 90
. Color intensity	Good (90)	Excellent (100)	.05 point for every point over 90
. % Conforming to AAN Standard	80%	90%	.05 point for every % point over 80

Plant growth must include age of liner plus years of growth in the field.

Cost Accounting - Nursery Production
Field Grown B&B Evergreen Shrubs, Spreading Yew, Taxus cuspidata

1. Cost of lining out stock from 5¢ to 35¢ per plant. Use actual price paid.

2. Cost of land per 1000 sq. ft.

3. Cost of labor chargeable to this crop, about $167 per 1000 sq. ft.

4. Overhead (supplies, equipment) per 1000 sq. ft.

5. Marketing cost - about 20% of sum of all other costs.

Analysis of Field Grown B&B Evergreen Shrubs
Spreading Yew, Taxus cuspidata

Name ______________________ Date Started __________ Ended __________

School ______________________ Genus __________ Species __________

County ______________________ Total Receipts ______________________ x

Sq. ft. used ______________________ a Total Expenses ______________________ y

No. sold ______________________ b Labor-Management Income ______________________ z
(x - y = z)

No. per 1000 sq. ft. ______________________ Income/1000 sq. ft. ______________________
(b ÷ a) x 1000 (z ÷ a) x 1000

Poor	Average	Superior

1. 80% — 90% — 100%
% Marketed

2. 7 — 5 — 3
Years of growth until marketed

3. 85% — 90% — 95%
% Of plants reaching 24-36" grade at harvest

4. 110 — 140 — 125
No. plants per 1000 sq. ft.

5. Poor — Good — Excellent
Symmetrical branching

6. 80% — 90% — 95%
% Blemish free

7. 70% — 80% — 90%
% Conforming to AAN Standard

Place a red "G" on each line scale at goal set. Place a red "A" on each line scale at efficiency achieved.

Practices and/or conditions which limited the production and income:	Practices and conditions which contributed to superior efficiency:

Approved Practices - Field Grown B&B Evergreen Shrubs
Pfitzer Juniper, Juniperus chinensis

PRACTICE	REFERENCE
1. Block planning, species selection, site and soil selection, and crop rotation	P. 35-43, 105-106, 203
2. Soil preparation	P. 107-109
3. Lining out and planting	P. 109-112, 130
4. Watering	P. 112
5. Fertilizing	P. 114-117
6. Pest Control (weeds, insects, and disease)	P. 121-127
7. Pruning, supporting, and root pruning	P. 117-121
8. Digging	P. 134-138
9. Grading and market preparation	P. 139-141, 178-187

Reference; NURSERY PRODUCTION, A STUDENT HANDBOOK, PSU 1971

Goals Stated in Relation to Efficiency

Field Grown B&B Evergreen Shrubs,
Pfitzer Juniper, Juniperus chinensis

	Efficiency Standards	
Efficiency Factors	Average	Superior
1. % Marketed	90%	95%
2. Years of growth to market a 24-30" sheared plant	4	3
3. No. of plants per 1000 sq. ft.	125	140
4. Dense and symmetrical growth	Good	Excellent
5. Blemish free	90%	95%
6. Intense color	Good	Excellent
7. % Conforming to AAN Standard	80%	90%

Contest	Efficiency Factors	Min. Efficiency Level for Determining Score (average)	Max. Efficiency Level for Determining Score (superior)
Field Grown B&B Evergreen Shrubs Pfitzer Juniper Juniperus Chinensis	a. % Marketed	90%	95%
	b. Years of plants growth to market 24"-30" size *	4	3
	c. % of plants reaching 24"-30", sheared	90%	95%
	d. Number of plants per 1000 sq. ft.	125	140
	e. % Blemish free trees (free of insects, disease and mech. injury)	90%	95%
	f. Color intensity	Good (90)	Excellent (100)
	g. % Conforming to AAN Standard	80%	90%

* Plant growth must include age of liner plus years of growth in the field.

cy Factors	Min. Efficiency Level for Determining Score (average)	Max. Efficiency Level for Determining Score (superior)	Method of Determining Score
rketed	90%	95%	.1 point for every % point over 90
s of plants growth arket 24"-30" size *	4	3	.5 point for every 6 months harvesting before the 5 years
plants reaching 30", sheared	90%	95%	.1 point for every % point over 90
er of plants per 1000 ft.	125	140	.035 point for every plant over 125-not to exceed 140 plants/ 1000 sq. ft.
emish free trees e of insects, disease mech. injury)	90%	95%	.1 point for every % point over 90
or intensity	Good (90)	Excellent (100)	.05 point for every point over 90
nforming to AAN dard	80%	90%	.05 point for every % point over 80

growth must include age of liner plus yearsof growth in the field.

Cost Accounting - Nursery Production
Field Grown B&B Evergreen Shrubs,
Pfitzer Juniper, Juniperus chinensis

1. Cost of lining out stock from 5¢ to 35¢ per plant. Use actual price paid.
2. Cost of land per 1000 sq. ft.
3. Cost of labor chargeable to this crop, about $167 per 1000 sq. ft.
4. Overhead (supplies, equipment) per 1000 sq. ft.
5. Marketing cost - about 20% of sum of all other costs.

Analysis of Field Grown B&B Evergreen Shrubs
Pfitzer Juniper, Juniperus chinensis

Name ______________________ Date started __________ Ended __________

School ______________________ Genus __________ Species __________

County ______________________ Total Receipts ______________________ x

Sq. Ft. used ______________ a Total Expenses ______________________ y

No. sold B&B ______________ b Labor-Managment Income ______________ z

No. per 1000 sq. ft. __________ Income/1000 sq. ft. ______________
(b ÷ a) x 1000 (z ÷ a) x 1000

Poor Average Superior

1. 80% 90% 100%
% Marketed

2. 5 4 3
Years of growth until marketed

3. 85% 90% 95%
% of Plants reaching 24"-30" spread at harvest, sheared

4. 110 125 140
No. plants per 1000 sq. ft.

5. Poor Good Excellent
Symmetrical branching

6. 80% 90% 95%
% Blemish free

7. Poor Good Excellent
Color Intensity

8. 70% 90% 90%
% Conforming to AAN Standard

Place a red "G" on each line scale at goal set. Place a red "A" on each line scale at efficiency achieved.

Practices and/or conditions which limited the production and income:	Practices and conditions which contributed to superior efficiency:

Approved Practices - Field Grown B&B and Bare Root Deciduous Shrub Dwarf Burning Bush, Euonymus alatus compacta

PRACTICE	REFERENCE
1. Block planning, species selection, site and soil selection, and crop rotation	P. 35-43, 105-106, 203
2. Soil preparation	P. 107-109
3. Lining out and planting	P. 109-112, 130
4. Watering	P. 112
5. Fertilizing	P. 114-117
6. Pest control (weeds, insect, disease)	P. 121-127
7. Pruning, supporting, and root pruning	P. 117-121
8. Digging	P. 134-138
9. Grading and market preparation	P. 139-141, 177-187

Reference; NURSERY PRODUCTION, A STUDENT HANDBOOK, PSU 1971

Goals Stated in Relation to Efficiency
Field Grown B&B and Bare Root Deciduous Shrub
Dwarf Burning Bush, Euonymus alátus compatca

Efficiency Factors	Efficiency Standards	
	Average	Superior
1. % Marketed	90%	95%
2. Years of growth to market a 30"-36" plant	4	3
3. No. of plants per 1000 sq. ft.	125	140
4. Dense and symmetrical growth	Good	Excellent
5. Blemish free	90%	95%
6. % Conforming to AAN Standard	80%	90%

Contest	Efficiency Factors	Min. Efficiency Level for Determining Score (average)	Max. Efficiency Level for Determining Score (superior)
Field Grown B&B and Bare Root Deciduous Shrub Burning Bush Dwarf Eyonymus alatus compacta	a. % Marketed	90%	95%
	b. Years of plants growth to market a 30"-36" plant *	4	3
	c. % of crop reaching 30"-36"	90%	95%
	d. Number of plants per 1000 sq. ft.	125	140
	e. Blemish free (free of insect, disease, and mech. damage)	90%	95%
	f. % Conforming to AAN Standard	80%	90%

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* Plant growth must include age of liner plus the years of growth in the f

iciency Factors	Min. Efficiency Level for Determining Score (average)	Max. Efficiency Level for Determining Score (superior)	Method for Determining Score
% Marketed	90%	95%	.1 point for every % point over 90%
Years of plants growth to market a 30"-36" plant *	4	3	.5 point for every 6 months harvested before 4 years
% of crop reaching 30"-36"	90%	95%	.1 point for every % point over 90
Number of plants per 1000 sq. ft.	125	140	.035 point for every plant/1000 sq. ft. over 125 not to exceed 140 plants/1000 sq. ft.
Blemish free (free of insect, disease, and mech. damage)	90%	95%	.1 point for every % point over 90%
% Conforming to AAN Standard	80%	90%	.05 point for every % point over 90%

lant growth must include age of liner plus the years of growth in the field.

Cost Accounting - Nursery Production
Field Grown B&B and Bare Root Deciduous Shrubs,
Dwarf Burning Bush, Euonymus alatus compacta

1. Cost of lining out stock from 5¢ to 35¢ per plant. Use actual price paid.

2. Cost of land per 1000 sq. ft.

3. Cost of labor chargeable to this crop, about $167 per 1000 sq. ft.

4. Overhead (supplies, equipment) per 1000 sq. ft.

5. Marketing cost--about 20% of sum of all other costs.

Analysis of Field Grown B&B and Bare Root Deciduous Shrubs, Dwarf Burning Bush, Euonymus alta compacta

Name ____________________ Date Started __________ Ended __________

School ____________________ Genus __________ Species __________

County ____________________ Total Receipts ____________________ x

Sq. ft. used ____________________ a Total Expenses ____________________ y

No. sold B&B ____________________ b Labor-Management Income ____________________ z
(x - y = z)

No. sold Bare Root ____________________

No. per 1000 sq. ft. ____________________
(a ÷ b) x 1000

Income/1000 sq. ft. ____________________
(z ÷ a) x 1000

		Poor	Average	Superior
1.	% Marketed	80%	90%	100%
2.	Years of growth until marketed at 30-36" size	5	4	3
3.	% of plants reaching 30-36" grade at harvest	85%	90%	95%
4.	No. plants per 100 sq. ft.	110	125	140
5.	Symmetrical branching	Poor	Good	Excellent
6.	% Blemish free	80%	90%	95%
7.	% Conforming to AAN Standard	70%	80%	90%

Place a red "G" on each line scale at goal set. Place a red "A" on each line scale at efficiency achieved.

Practices and/or conditions which limited the production and income:

Practices and conditions which contributed to superior efficiency:

Approved Practices - Field Grown B&B or Bare Root Deciduous Shrub
Forsythia, Forsythia Intermedia spectabilis

PRACTICE	REFERENCE
1. Block planning, species selection, site and soil selection, and crop rotation	P. 35-43
2. Soil preparation	P. 107-109
3. Lining out and planting	P. 109-110
4. Watering	P. 112
5. Fertilizing	P. 114
6. Pest control (weeds, insects, disease)	P. 121-127
7. Pruning, supporting, and root pruning	P. 117-121
8. Digging	P. 134-138
9. Market preparation	P. 171-185

Reference: NURSERY PRODUCTION, A STUDENT HANDBOOK, PSU 1971

Goals Stated in Relation to Efficiency

Field Grown B&B and Bare Root Deciduous Shrub,
Forsythia, Forsythia intermedia spectabilis

Efficiency Factors	Efficiency Standards Average	Superior
1. % Marketed	90%	95%
2. Years of growth to market a 5'-6' plant	5	3
3. No. of plants per 1000 sq. ft.	125	140
4. Dense and symmetrical growth	Good	Excellent
5. % Blemish free	90%	95%
6. % Conforming to AAN Standard	80%	90%

Contest	Efficiency Factors	Min..Efficiency Level for Determining Score (average)	Max. Efficiency Level for Determining Score (superior)
Field Grown B&B and Bare Root Deciduous Shrubs Forsythia Forsythia intermedia spectabilis	a. % Marketed	90%	95%
	b. Years of plants growth to to market a 5'-6' plant *	4	3
	c. % of crop reaching a 4'-6' height or better	90%	95%
	d. Number of plants per 1000	125	140
	e. % blemish free shrubs	90%	95%
	f. % Conforming to AAN Standard	80%	90%

* Plant growth must include age of liners and years of growth in the field

cy Factors	Min..Efficiency Level for Determining Score (average)	Max. Efficiency Level for Determining Score (superior)	Method for Determining Score
keted	90%	95%	.1 point for every % point over 90%
of plants growth to rket a 5'-6' plant *	4	3	.5 points for every 6 months harvesting before the 4 years
crop reaching a 4'-6' t or better	90%	95%	.1 point for every % point over 90%
r of plants per 1000	125	140	.035 point for every plant/1000 sq. ft. over 125- not to exceed 150 plants/1000 sq. ft.
mish free shrubs	90%	95%	.1 point for every % point over 90%
nforming to AAN lard	80%	90%	.05 point for every % point over 80%

growth must include age of liners and years of growth in the field.

Cost Accounting - Nursery Production
Field Grown B&B and Bare Root Deciduous Shrub, Forsythia,
Forsythia intermedia spectabilis

1. Cost of lining out stock from 5¢ to 35¢ per plant. Use actual price paid.
2. Cost of land per 1000 sq. ft.
3. Cost of labor chargeable to this crop, about $167 per 1000 sq. ft.
4. Overhead (supplies, equipment) per 1000 sq. ft.
5. Marketing cost - about 20% of sum of all other costs.

Analysis of Field Grown B&B and Bare Root Deciduous Shrub, Forsythia, Forsythia intermedia spectabilis

Name ______________________ Date Started __________ Ended __________

School ______________________ Genus __________ Species __________

County ______________________ Total Receipts ______________________ x

Sq. ft. used ______________ a Total Expenses ______________________ y

No. sold B&B ______________ b Labor-Management Income ______________ z
(x - y = z)

No. sold Bare Root __________ c

No. per 1000 sq. ft. __________ Income/1000 sq. ft. ______________
[(b + c) ÷ a] x 1000 (z ÷ a) x 1000

	Poor	Average	Superior
1. % Marketed	80%	90%	100%
2. Years of growth until marketed at 5-6' height	5	4	3
3. % of plants reaching 5-6' grade at harvest	85%	90%	95%
4. No. plants per 1000 sq. ft.	110	125	140
5. Symmetrical Branching	Poor	Good	Excellent
6. % Blemish Free	80%	90%	95%
7. % Conforming to AAN Standard	70%	80%	90%

Place a red "G" on each line scale at goal set. Place a red "A" on each line scale at efficiency achieved.

Practices and/or conditions which limited the production and income:

Practices and conditions which contributed to the superior efficiency:

Approved Practices - Field Grown B&B and Bare Root Deciduous Shrubs
Lilac, Syringa vulgaris

PRACTICE	REFERENCE
1. Block planning, species selection, site and soil selection, and crop rotation	P. 35-43, 105-106, 203
2. Soil preparation	P. 107-109
3. Lining out and planting	P. 109-112, 130
4. Watering	P. 112
5. Fertilizing	P. 114-117
6. Pest control (weeds, insects, disease)	P. 121-127
7. Pruning, supporting, and root pruning	P. 117-121
8. Digging	P. 134-138
9. Grading and market preparation	P. 139-141, 178-187

Reference: NURSERY PRODUCTION, A STUDENT HANDBOOK, PSU 1971

Goals Stated in Relation to Efficiency

Field Grown B&B and Bare Root Deciduous Shrub,
Syringa vulgaris

Efficiency Factors	Efficiency Standards Average	 Superior
1. % Marketed	90%	95%
2. Years of growth to market a 4'-5' plant	5	4
3. No. of plants per 1000 sq. ft.	125	140
4. Dense and symmetrical growth	Good	Excellent
5. % Blemish free	90%	95%
6. % Conforming to AAN Standard	80%	90%

Contest	Efficiency Factors	Min. Efficiency Level for Determining Score (average)	Max. Efficiency Level for Determinin Score (superior)
Field Grown B&B and Bare Root Deciduous Shrubs Lilac Syringa vulgaris	a. % Marketed	90%	95%
	b. Years of plants growth	5	4
	c. % of crop reaching a 4'-5' height	90%	95%
	d. Number of plants per 1000 sq. ft.	125	140
	e. % Blemish free shrubs (free of insects, disease, and mech. injury)	90%	95%
	f. % Conforming to AAN Standard	80%	90%

* Plant growth must include age of liners plus years of growth in the fi

ficiency Factors	Min. Efficiency Level for Determining Score (average)	Max. Efficiency Level for Determining Score (superior)	Method for Determining Score
% Marketed	90%	95%	.1 point for every % of 90%
Years of plants growth	5	4	.5 point for every 6 months harvested before the 5 years
% of crop reaching a 4'-5' height	90%	95%	.1 point for every % point above 90%
Number of plants per 1000 sq. ft.	125	140	.035 point for every plant/1000 sq. ft. over 125-not to exceed 140 plants/1000 sq. ft.
% Blemish free shrubs (free of insects, disease, and mech. injury)	90%	95%	.1 point for every % point above 90%
% Conforming to AAN Standard	80%	90%	.05 point for every % point over 80%

Plant growth must include age of liners plus years of growth in the field.

Cost Accounting - Nursery Production
Field Grown B&B and Bare Root Deciduous Shrub,
Lilac, Syringa vulgaris

1. Cost of lining out stock from 5¢ to 35¢ per plant. Use actual price paid.

2. Cost of land per 1000 sq. ft.

3. Cost of labor chargeable to this crop, about $167 per 1000 sq. ft.

4. Overhead (supplies, equipment) per 1000 sq. ft.

5. Marketing cost - about 20% of sum of all other costs.

Analysis of Field Grown B&B and Bare Root Deciduous Shrubs
Lilac, Syringa vulgaris

Name ______________________ Date Started __________ Ended __________

School ______________________ Genus __________ Species __________

County ______________________ Total Receipts ______________________ x

Sq. Ft. used ______________________ a Total Expenses ______________________ y

No. sold B&B ______________________ b Labor-Mgmt. Income ______________________ z
(x - y = z)

No. sold Bare Root ______________ c

No. per 1000 sq. ft. ______________ Income/1000 sq. ft. ______________
(b + c ÷ a) x 1000 (z ÷ a) x 1000

Poor Average Superior

1. 80% 90% 100%
% Marketed

2. 6 5 4
Years of growth until marketed at 4-5' height

3. 85% 90% 95%
% of Plants reaching 4-5' grade at harvest

4. 110 125 140
No. Plants per 1000 sq. ft.

5. Poor Good Excellent
Symmetrical branching

6. 80% 90% 95%
% Blemish free

7. 70% 80% 90%
% Conforming to AAN standard

Place a red "G" on each line scale at goal set. Place a red "A" on each line scale at efficiency achieved.

Practices and/or conditions which limited the production and income:	Practices and conditions which contributed to superior efficiency:

Approved Practices - Field Grown B&B and Bare Root Deciduous Shrubs
Mockorange, virginalis

PRACTICE	REFERENCE
1. Block planning, species selection, site and soil selection, and crop rotation	P. 35-43, 105-106, 203
2 Soil preparation	P. 107-109
3. Lining out and planting	P. 109-112, 130
4. Watering	P. 112
5. Fertilizing	P. 114-117
6. Pest control (weeds, insect, disease)	P. 121-127
7. Pruning, supporting, and root pruning	P. 117-121
8. Digging	P. 134-138
9. Grading and market preparation	P. 139-141, 178-187

Reference: NURSERY PRODUCTION, A STUDENT HANDBOOK, PSU 1971

Goals Stated in Relation to Efficiency
Field Grown B&B and Bare Root Deciduous Shrubs
Mockorange, Philadelphus virginalis

Efficiency Factors	Efficiency Standards Average	Superior
1. % Marketed	90%	95%
2. Years of growth to market a 4'-5' plant	5	4
3. No. of plants per 1000 sq. ft.	125	140
4. Dense and symmetrical growth	Good	Excellent
5. % Blemish free	90%	95%
6. % Conforming to AAN Standard	80%	90%

Contest	Efficiency Factors	Min. Efficiency Level for Determining Score (average)	Max. Efficiency Level for Determinin Score (superior)
Field Grown B&B and Bare Root Deciduous Shrubs Mockorange Philadelphus virginalis	a. % Marketed	90%	95%
	b. Years of plants growth to market a 4'-5' plant *	5	4
	c. % of crop reaching a 4'-5' height	90%	95%
	d. Number of plants per 1000 sq. ft.	125	140
	e. % Blemish free shrubs (free of insect, disease and mech. injury)	90%	95%
	f. % Conforming to AAN Standard	80%	90%

* Plant growth must include age of liners plus years of growth in the f

ciency Factors	Min. Efficiency Level for Determining Score (average)	Max. Efficiency Level for Determining Score (superior)	Method for Determining Score
% Marketed	90%	95%	.1 point for every % point over 90%
Years of plants growth to market a 4'-5' plant *	5	4	.5 point for every 6 month harvested before the 5 years
% of crop reaching a 4'-5' height	90%	95%	.1 point for every % point above 90%
Number of plants per 1000 sq. ft.	125	140	.035 point for every plants/1000 sq. ft. over 125- not to exceed 140 plants/1000 sq. ft.
% Blemish free shrubs (free of insect, disease and mech. injury)	90%	95%	.1 point for every % point above 90%
% Conforming to AAN Standard	80%	90%	.05 point for every % point above 80%

lant growth must include age of liners plus years of growth in the field.

Cost Accounting - Nursery Production
Field Grown B&B and Bare Root Deciduous Shrub,
Mockorange, Philadelphus, virginalis

1. Cost of lining out stock from 5¢ to 35¢ per plant. Use actual price paid.

2. Cost of land per 1000 sq. ft.

3. Cost of labor chargeable to this crop, about $167 per 1000 sq. ft.

4. Overhead (supplies, equipment) per 1000 sq. ft.

5. Marketing cost - about 20% of sum of all other costs.

Analysis of Field Grown B&B and Bare Root Deciduous Shrubs
Mockorange, Philadelphus virginalis

Name ________________________

School ________________________

County ________________________

Sq. ft. used ____________ a

No. sold B&B ____________ b

No. sold Bare Root ____________ c

No. per 1000 sq. ft. ____________
[(b + c) ÷ a] x 1000

Date Started ____________ Ended ____________

Genus ____________ Species ____________

Total Receipts ____________ x

Total Expenses ____________ y

Labor-Management Income ____________ z
(x - y = z)

Income/1000 sq. ft. ____________
(z ÷ a) x 1000

Poor Average Superior

1. 80% 90% 100%
% Marketed

2. 6 5 4
Years of growth until marketed at 4-5' height

3. 85% 90% 95%
% of plants reaching 4-5' grade at harvest

4. 110 125 140
No. plants per 1000 sq. ft.

5. Poor Good Excellent
Symmetrical Branching

6. 80% 90% 95%
% Blemish Free

7. 70% 80% 90%
% Conforming to AAN Standard

Place a red "G" on each line scale at goal set. Place a red "A" on each line scale at efficiency achieved.

Practices and/or conditions which limited the production and income:	Practices and conditions which contributed to superior efficiency:

Approved Practices - Field Grown B&B and Bare Root Deciduous Shrubs
Viburnum, Viburnum sieboldi

PRACTICE	RERERENCE
1. Block planning, species selection, site and soil selection, and crop rotation	P. 35-43, 105-106, 203
2. Soil preparation	P. 107-109
3. Lining out and planting	P. 109-112, 130
4. Watering	P. 112
5. Fertilizing	P. 114-117
6. Pest control (weeds, insect, disease)	P. 121-127
7. Pruning, supporting, and root pruning	P. 117-121
8. Digging	P. 134-138
9. Grading and market preparation	P. 139-141, 178-187

Reference: NURSERY PRODUCTION, A STUDENT HANDBOOK, PSU 1971

Goals Stated in Relation to Efficiency

Field Grown B&B and Bare Root Deciduous Shrub,
Viburnum, Viburnum sieboldi

Efficiency Factors	Efficiency Standards Average	 Superior
1. % Marketed	90%	95%
2. Years of growth to market a 3'-4' plant	5	4
3. No. of plants per 1000 sq. ft.	125	140
4. Dense and symmetrical growth	Good	Excellent
5. % Blemish free	90%	95%
6. % Conforming to AAN Standard	80%	90%

Contest	Efficiency Factor	Min. Efficiency Level for Determining Score (average)	Max. Efficiency Level for Determinin
Field Grown B&B and Bare Root Deciduous Shrub Viburnum, Viburnum sieboldi	a. % Marketed	90%	95%
	b. Years of plants growth to market a 3'-4' plant *	5	4
	c. % Crop reaching a 3'-4' height	90%	95%
	d. Number of plants per 1000 sq. ft.	125	140
	e. % Blemish free shrubs (free of insect, disease, and mech. injury)	90%	95%
	f. % Conforming to AAN Standard	80%	90%

* Plant growth must include age of the liner plus years of growth in the

iciency Factor	Min. Efficiency Level for Determining Score (average)	Max. Efficiency Level for Determining Score (superior)	Method of Determining Score
% Marketed	90%	95%	.1 point for every % point over 90%
Years of plants growth to market a 3'-4' plant *	5	4	.52 point for every 6 months harvested before 5 years
% Crop reaching a 3'-4' height	90%	95%	.12 points for every % point above 90%
Number of plants per 1000 sq. ft.	125	140	.015 point for every plant/1000 sq. ft. over 125-not to exceed 140 plants/ 1000 sq. ft.
% Blemish free shrubs (free of insect, disease, and mech. injury)	90%	95%	.1 point for every % point over 90%
% Conforming to AAN Standard	80%	90%	.05 point for every % point over 80%

lant growth must include age of the liner plus years of growth in the field.

Cost Accounting - Nursery Production
Field Grown B&B and Bare Root Deciduous Shrub, Viburnum, Viburnum sieboldi

1. Cost of lining out stock from 5¢ to 35¢ per plant. Use actual price paid.

2. Cost of land per 1000 sq. ft.

3. Cost of labor chargeable to this crop, about $167 per 1000 sq. ft.

4. Overhead (supplies, equipment) per 1000 sq. ft.

5. Marketing cost - about 20% of sum of all other costs.

Analysis of Field Grown B&B and Bare Root Deciduous Shrubs
Viburnum, Viburnum sieboldi

Name ______________________

Date Started __________ Ended __________

School ______________________

Genus __________ Species __________

County ______________________

Total Receipts __________ x

Sq. ft. used __________ a

Total Expenses __________ y

No. sold B&B __________ b

Labor-Management Income __________ z
(x - y = z)

No. sold Bare Root __________ c

No. per 1000 sq. ft. __________
[(b + c) ÷ a] × 1000

Income/1000 sq. ft. __________
(z ÷ a) × 1000

	Poor	Average	Superior	
1.	80%	90%	100%	% Marketed
2.	6	5	4	Years of growth until marketed at 3-4' height
3.	85%	90%	95%	Percent of plants reaching 3-4' grade at harvest
4.	110	125	140	No. plants per 1000 sq. ft.
5.	Poor	Good	Excellent	Symmetrical Branching
6.	80%	90%	95%	% Blemish free
7.	70%	80%	90%	% Confirming to AAN Standard

Place a red "G" on each line scale at goal set. Place a red "A" on each line scale at efficiency achieved.

Practices and conditions which limited the production and income:	Practices and conditions which contributed to superior efficiency:

Prepared by The Department of Agricultural Education, The Pennsylvania State University, in cooperation with the Pennsylvania Department of Education and Pennsylvania Vocational Agriculture Teachers. 1974

Supervised Occupational Experience Record Forms
for
Ornamental Horticulture
(Revised)
1974

NURSERY PRODUCTION - CONTAINER GROWN PLANTS E 139-186
- Red Leaf Japanese Maple E 142-146
- Chinese Wisteria E 147-152
- Weigela E 153-158
- Dwarf Pfitzer Juniper E 159-163
- Spreading Cotoneaster E 164-169
- Deciduous and Evergreen Groundcovers E 170-175
- Deciduous and Evergreen Vines E 176-181
- Herbaceous Perennial Flowers E 182-188

Department of Agricultural Education
The Pennsylvania State University
in cooperation with
Bureau of Vocational Education
Pennsylvania Department of Education

Using The Forms

The five record sheets included in this unit are intended to be used with any production, occupational or work experience record book for high school vocational agriculture programs.

Approved Practices gives specific references to production or service practices that are generally accepted in industry as giving superior results if appropriately applied. A particular business firm might use variations of some of these practices because of unusual local conditions. Students carrying out production projects should find these references especially helpful. Students in agricultural production or services work experience will find them useful guides to what will be expected of them on the job.

Goals are stated in relation to efficiency. They are drawn up on the basis of comparisons of superior achievement with average achievement. The goals given are considered realistic in terms of production enterprises or work experience in production or services occupations. Successful businesses rank somewhere between "average" and "superior" in their goals.

The Efficiency Factor form provides a means for giving a numerical score on goal achievement. It is equally applicable to production enterprises, production occupations or service occupations. The scores are used as one base for comparisons in judging of record books in regional and state record book contests.

Cost Accounting record forms serve as a guide for calculating the costs and profit in a production enterprise or a production experience. These figures, together with production figures, are used in the analysis of the enterprise.

The Employment Achievement form is used in place of the Cost Accounting form when the experiences involve employment in a service occupation rather than production occupation.

The Analysis form should be marked at the beginning of the experience program with a "G" to indicate the goal that a student has set for himself. The same scales are marked with an "A" to indicate actual achievement at the end of the experience program. The analysis sheet provides for an evaluation of the approved practices used and their relationship to production or service and income.

Example of the Use of Efficiency Factors and Production Goals

The Pennsylvania Agricultural Production Program Record Book provides space for the student to list appropriate efficiency factors for each productive enterprise. In the example below, the figures in the column "Local Efficiency Standards" will have been obtained through group study by the students with the help of the teacher. An analysis of records of similar enterprises completed in previous years by students in the same school will also serve as a guide.

PRODUCTION GOALS: Potted Chrysanthemum ENTERPRISE

Efficiency Factor	Local Efficiency Standards Average	Local Efficiency Standards Superior	Student Goal	Student Achievement
Percent marketed	95%	100%	100%	97%
Number of 6" pots per 100 sq. ft. of bench space	75	100*	100	98
Number of blooms/6" pot	18	24	24	22
Percent of pots in 16" to 18" height range including pot marketed	90%	95%	95%	92%

* Optimum number

Approved Practices - Container Grown Plants
Red Leaf Japanese Maple, Acer palmatum atropurpureum

PRACTICE	REFERENCE
1. Crop Planning, Rotation Schedule	P. 144-150, 164-169
2. Container Selection	P. 145-147
3. Soil Preparation	P. 150-153
4. Planting	P. 153-154
5. Staking	P. 117-120
6. Watering	P. 154-158
7. Pruning	P. 160-161
8. Fertilizing	P. 158-160
9. Pest Control	P. 161-162
10. Environmental Control	P. 47
11. Winter Protection	P. 162-164
12. Grading and Market Preparation	P. 164, 177-178, 184-187

Reference: NURSERY PRODUCTION, A STUDENT HANDBOOK, PSU 1971

Goals Stated in Relation to Efficiency
Nursery Production, Container Grown, Red Leaf Japanese Maple, Acer palmatum atropurpureum

Efficiency Factors	Efficiency Standards Average	Superior
1. % Marketed	90%	95%
2. Years of plant growth to market an 18"-24" plant	4	3
3. No. of plants/1000 sq. ft.	250	275
4. Symmetrical branching	Good	Excellent
5. Blemish free trees	90%	95%
6. % conforming to AAN Standard	80%	90%

Contest	Efficiency Factors	Min. Efficiency Level for Determining Score (average)	Max. Efficiency Level for Determinin Score (superior)
Deciduous Plants 2 gal. containers Red Leaf Japanese Maple Acer palmatum atropurpureum	a. % Marketed	90%	95%
	b. Years of plant growth to market a 18-24" plant (including container height)*	4 yrs.	3 yrs.
	c. % of crop reaching 18-24" height including container	90%	95%
	d. Container plants per 1000 sq. ft.	250	275
	e. % Unblemished (free of insects disease and mech. injury)	90%	95%
	f. % conforming to AAN Standard	80%	90%

* Plant growth must include age of liner plus years of growth in the c

iency Factors	Min. Efficiency Level for Determining Score (average)	Max. Efficiency Level for Determining Score (superior)	Method of Determining Score
Marketed	90%	95%	.1 point for every % point over 90
ars of plant growth to rket a 18-24" plant ncluding container ight)*	4 yrs.	3 yrs.	.5 point for every year of harvest under 3 yrs.
of crop reaching -24" height cluding container	90%	95%	.1 point for every % point over 90
ntainer plants per 00 sq. ft.	250	275	.02 point/plant over 250 plants-not to exceed 275 plants/1000 sq. ft.
Unblemished (free insects disease and ech. injury)	90%	95%	.1 point for every % point over 90
conforming to AAN randard	80%	90%	.05 point for every 1% over 80%

ant growth must include age of liner plus years of growth in the container

Cost Accounting - Nursery Production
Container Grown Plants, Red Japanese Maple
Acer palmatum atropurpureum

1. Cost of lining out stock from 5¢ to 35¢ per plant. Use actual price paid.
2. Cost of container.
3. Cost of growing medium, about $14 per cubic yard.
4. Cost of land per 1000 sq. ft.
5. Cost of labor chargeable to this crop.
6. Overhead (supplies, equipment) per 1000 sq. ft.
7. Marketing cost - about 20% of sum of all other costs.

Analysis of Container Grown Plants
Red Japanese Maple Acer palmatum atropurpureum

Name____________________

School____________________

County____________________

Sq. ft. used____________________a

No. sold____________________b

No. per 1,000 sq. ft.____________
(b ÷ a) × 1000

Date Started__________Ended________

Genus__________Species__________

Total Receipts____________________x

Total Expenses____________________y

Labor-Mgmt. Income______________z
(x - y = z)

Income/1,000 sq. ft.____________
(z - a) × 1,000

	Poor	Average	Superior	
1.	80%	90%	100%	% Marketed
2.	5 yrs.	4 yrs.	3 yrs.	Years of growth until marketed at 18"-24" height
3.	85%	90%	95%	% of plants reaching 18"-24" grade at harvest
4.	225	250	275	No. plants per 1,000 sq. ft.
5.	Poor	Good	Excellent	Symmetrical branching
6.	80%	90%	95%	% Blemish free
7.	70%	80%	90%	% Conforming to AAN Standard

Place a red "G" on each line scale at goal set. Place a red "A" on each line scale at efficiency achieved.

Practices and conditions which limited reproduction and income:

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Practices and conditions which contributed to superior efficiency:

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Approved Practices - Container Grown Plants
Chinese Wisteria, Wisteria sinensis

PRACTICE	REFERENCE
1. Crop Planning, Rotation Schedule	P. 144-150, 164-169
2. Container Selection	P. 145-147
3. Soil Preparation	P. 150-153
4. Planting	P. 153-154
5. Staking	P. 117-120
6. Watering	P. 154-158
7. Pruning	P. 160-161
8. Fertilizing	P. 158-160
9. Pest Control	P. 161-162
10. Environmental Control	P. 47
11. Winter Protection	P. 162-164
12. Grading and Market Preparation	P. 164, 177-178, 184-187

Reference: NURSERY PRODUCTION, A STUDENT HANDBOOK, PSU 1971

Goals Stated in Relation to Efficiency Nursery Production, Container Grown, Chinese Wisteria, Wisteria sinensis

Efficiency Factors	Efficiency Standards Average	 Superior
1. % Marketed	90%	95%
2. Years of plant growth to market an 18"-24" plant	3	2
3. No. of plants/1000 sq. ft.	250	275
4. Symmetrical branching	Good	Excellent
5. Blemish free plant	90%	95%
6. % Conforming to AAN Standard	80%	90%

Contest	Efficiency Factors	Min. Efficiency Level for Determining Score (average)	Max. Efficiency Level for Determining Score (superior)
Deciduous Plants 2 gal. containers Chinese Wisteria Wisteria sinensis	a. % Marketed	90%	95%
	b. Years of plant growth to market at 18"-24" *	3 yrs.	2 yrs.
	c. % of crop reaching 18'24" height at market time	90	95
	d. Container plants per 1000 sq. ft.	250	275
	e. % Unblemished (free of insect, disease and mechanical injury)	90%	95%
	f. % conforming to AAN Standard	80%	90%

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* Plant growth must include age of liner plus years of growth in the cont

ficiency Factors	Min. Efficiency Level for Determining Score (average)	Max. Efficiency Level for Determining Score (superior)	Method of Determining Score
% Marketed	90%	95%	.1 point for every % point over 90
Years of plant growth to market at 18"-24" *	3 yrs.	2 yrs.	.5 point for every year of harvest under 2 yrs.
% of crop reaching 18'24" height at market time	90	95	.1 point for every % point over 90
Container plants per 1000 sq. ft.	250	275	.02 point/plant over 250 plants- not to exceed 275 plants/1000 sq. ft.
% Unblemished (free of insect, disease and mechanical injury)	90%	95%	.1 point for every % point over 90
% conforming to AAN Standard	80%	90%	.05 point for every 1% over 80%

Plant growth must include age of liner plus years of growth in the container.

Cost Accounting - Nursery Production
Container Grown Plants, Chinese Wisteria, Wisteria sinensis

1. Cost of lining out stock from 5¢ to 35¢ per plant. Use actual price paid.
2. Cost of container.
3. Cost of growing medium, about $14 per cubic yard.
4. Cost of land per 1000 sq. ft.
5. Cost of labor chargeable to this crop.
6. Overhead (supplies, equipment) per 1000 sq. ft.
7. Marketing cost - about 20% of sum of all other costs.

Analysis of Container Grown Plants
Chinese Wisteria, Wisteria sinensis

Name ______________________ Date Started __________ Ended __________

School ______________________ Genus __________ Species __________

County ______________________ Total Receipts ______________ x

Sq. ft. used ______________ a Total Expenses ______________ y

No. sold ______________ b Labor-Mgnt. Income ______________ z
(x - y = z)

No. per 1000 sq. ft. ______________ Income/1000 sq. ft. ______________
(b ÷ a) × 1000 (z ÷ a) × 1000

	Poor	Average	Superior
1.	80%	90%	100%
		% Marketed	
2.	4	3	2
		Years of Growth Until Marketed at 18-24" Height	
3.	85%	90%	95%
		% of Plants Reaching 18-24" Grade at Harvest	
4.	225	250	275
		No. Plants per 1000 sq. ft.	
5.	Poor	Good	Excellent
		Symmetrical Branching	
6.	70%	80%	90%
		% Blemish Free	
7.	70%	80%	90%
		% Conforming to AAN Standard	

Place a red "G" on each line scale at goal set. Place a red "A" on each line scale at efficiency achieved.

Practices and conditions which limited production and income:	Practices and conditions which contributed to superior efficiency:
____________________	____________________
____________________	____________________
____________________	____________________

Approved Practices - Container Grown Plants
Weigela, Weigela florida

PRACTICE	REFERENCE
1. Crop Planning, Rotation Schedule	P. 144-150, 164-169
2. Container Selection	P. 145-147
3. Soil Preparation	P. 150-153
4. Planting	P. 153-154
5. Staking	P. 117-120
6. Watering	P. 154-158
7. Pruning	P. 160-161
8. Fertilizing	P. 158-160
9. Pest Control	P. 161-162
10. Environmental Control	P. 47
11. Winter Protection	P. 162-164
12. Grading and Market Preparation	P. 164, 177-178, 184-187

Referen[illegible] NURSERY PRODUCTION, A STUDENT HANDBOOK, PSU 1971

Goals Stated in Relation to Efficiency
Nursery Production, Container Grown, Weigela, Weigela florida

Efficiency Factors	Efficiency Standards Average	Efficiency Standards Superior
1. % Marketed	90%	95%
2. Years of plant growth to marketing an 18"-24" plant	3	2
3. No. of plants/1000 sq. ft.	250	275
4. Symmetrical branching	Good	Excellent
5. Blemish free shrubs	90%	95%
6. % Conforming to AAN Standard	80%	90%

Contest	Efficiency Factors	Min. Efficiency Level for Determining Score (average)	Max. Efficiency Level for Determinin Score (superior)
Deciduous Plants 2 gal. containers	a. % Marketed	90%	95%
Weigela Weigela florida	b. Years of plant growth to market 18"-24" including container height *	3 yrs.	2 yrs.
	c. % of crop reaching 18"-24" height at market time	90	95
	d. Container plants per 1000 sq. ft.	250	275
	e. % Unblemished (free of insect, disease, and mech. injury)	90	95
	f. % Conforming to AAN Standard	80%	90%

* Plant growth must include age of liner plus years of growth in the co

cy Factors	Min. Efficiency Level for Determining Score (average)	Max. Efficiency Level for Determining Score (superior)	Method of Determining Score
rketed	90%	95%	.1 point for every % point over 90
s of plant growth arket 18"-24" uding container nt *	3 yrs.	2 yrs.	.5 points for every month of harvest under 2 yrs.
crop reaching 4" height at et time	90	95	.1 point for every % point over 90
ainer plants per sq. ft.	250	275	.02 points/plant over 250 plants- not to exceed 275 plants/1000 sq. ft.
blemished s of insect, ase, and mech. ry)	90	95	.1 point for every % point over 90
nforming to Standard	80%	90%	.05 point for every 1% over 80%

growth must include age of liner plus years of growth in the container

Cost Accounting - Nursery Production
Container Grown Plants, Weigela, Weigela florida

1. Cost of lining out stock from 5¢ to 35¢ per plant. Use actual price paid.
2. Cost of containers.
3. Cost of growing medium about $14 per cubic yard.
4. Cost of land per 1000 sq. ft.
5. Cost of labor chargeable to this crop.
6. Overhead (supplies, equipment) per 1000 sq. ft.
7. Marketing cost - about 20% of sum of all other costs.

Container Grown Plants
Analysis of Weigela, Weigela florida

Name ______________________ Date Started __________ Ended __________

School ______________________ Genus __________ Species __________

County ______________________ Total Receipts ______________________ x

Sq. ft. used ______________________ a Total Expenses ______________________ y

No. sold ______________________ b Labor-Mgmt. Income ______________________ z
(x - y = z)

No. per 1000 sq. ft. ______________ Income/1000 sq. ft. ______________________
(b ÷ a) × 1000 (z ÷ a) × 1,000

		Poor	Average	Superior
1.	% Marketed	80%	90%	100%
2.	Years of Growth Until Marketed at 18-24" Height	4	3	2
3.	% of Plants Reading 18-24" Grade at Harvest	85%	90%	95%
4.	No. Plants per 1000 sq. ft.	225	250	275
5.	Symmetrical Branching	Poor	Good	Excellent
6.	% Blemish Free	80%	90%	95%
7.	% Conforming to AAN Standard	70%	80%	90%

Place a red "G" on each line scale at goal set. Place a red "A" on each line scale at efficiency achieved.

Practices and conditions which limited the production and income:

Practices and conditions which contributed to superior efficiency:

Approved Practices - Container Grown
Dwarf Pfitzer Juniper, Juniperus chinensis pfitzeriana compacta

PRACTICE	REFERENCE
1. Crop Planning, Rotation Schedule	P. 144-150, 164-169
2. Container Selection	P. 145-147
3. Soil Preparation	P. 150-153
4. Planting	P. 153-154
5. Staking	P. 117-120
6. Watering	P. 154-158
7. Pruning	P. 160-161
8. Fertilizing	P. 158-169
9. Pest Control	P. 161-162
10. Environmental Control	P. 47
11. Winter Protection	P. 162-164
12. Grading and Market Preparation	P. 164, 177-178, 184-188

Reference: NURSERY PRODUCTION, A STUDENT HANDBOOK, PSU 1971

Goals Stated in Relation to Efficiency

Nursery Production, Container Grown Dwarf Pfitzer Juniper,
Juniperus chinensis pfitzeriana compacta

Efficiency Factors	Efficiency Standards	
	Average	Superior
1. % Marketed	90%	95%
2. Years of plant growth to market an 18"-24" plant	3	2
3. No. of plants/1000 sq. ft.	250	275
4. Symmetrical branching	Good	Excellent
5. Blemish free shrubs	90%	95%
6. % Conforming to AAN Standard	80%	90%

Cost Accounting - Nursery Production
Container Grown Plants, Dwarf Pfitzer Juniper,
Juniperus chinensis pfitzeriana compacta

1. Cost of lining out stock from 5¢ to 35¢ per plant. Use actual price paid.
2. Cost of containers.
3. Cost of growing medium about $14 per cubic yard.
4. Cost of land per 1000 sq. ft.
5. Cost of labor chargeable to this crop.
6. Overhead (supplies, equipment) per 1000 sq. ft.
7. Marketing cost - about 20% of sum of all other costs.

Container Grown Plants
Analysis of Dwarf Pfitzer Juniper, Juniperus chinensis pfitzeriana compacta

Name____________________ Date Started__________ Ended__________

School____________________ Genus__________ Species__________

County____________________ Total Receipts____________________x

Sq. ft. used____________________a Total Expenses____________________y

No. sold____________________b Labor-Mgmt. Income____________________z
(x - y = z)

No. per 1000 sq. ft.____________________ Income/1000 sq. ft.____________________
(b ÷ a) × 1000 (z ÷ a) × 1,000

	Poor	Average	Superior
1. % Marketed	80%	90%	100%
2. Years of Growth Until Marketed at 18-24" spread	4 yrs.	3 yrs.	2 yrs.
3. % of Plants Reaching 18-24" Spread Grade at Harvest	85%	90%	95%
4. No. Plants per 1000 sq. ft.	225	250	275
5. Symmetrical Branching	Poor	Good	Excellent
6. % Blemish Free	80%	90%	95%
7. % Conforming to AAN Standard	70%	80%	90%

Place a red "G" on each line scale at goal set. Place a red "A" on each line scale at efficiency achieved.

Practices and conditions which limited the production and income:	Practices and conditions which contributed to superior efficiency:
______________________________	______________________________
______________________________	______________________________
______________________________	______________________________

Approved Practices - Container Grown Plants
Spreading Cotoneaster, Cotoneaster divaricata

Practice	Reference
1. Crop Planning, Rotation Schedule	P. 144-150, 164-169
2. Container Selection	P. 145-147
3. Soil Preparation	P. 150-153
4. Planting	P. 153-154
5. Staking	P. 117-120
6. Watering	P. 154-158
7. Pruning	P. 160-161
8. Fertilizing	P. 158-160
9. Pest Control	P. 161-162
10. Environmental Control	P. 47
11. Winter Protection	P. 162-164
12. Grading and Market Preparation	P. 164, 177-178, 184-188

Reference: NURSERY PRODUCTION, A STUDENT HANDBOOK, PSU, 1971

Goals Stated in Relation to Efficiency
Nursery Production, Container Grown Spreading Cotoneaster, Cotoneaster divaricata

Efficiency Factors	Efficiency Standards Average	 Superior
1. % Marketed	90%	95%
2. Years of plant growth to market a plant with an 18" to 24" spread	3	2
3. No. of plants/1000 sq. ft.	250	275
4. Symmetrical branching	Good	Excellent
5. Blemish free shrubs	90%	95%
6. % Conforming to AAN Standard	80%	90%

Contest	Efficiency	Min. Efficiency Level for Determining Score (average)	Max. Efficiency Level for Determining Score (superior)	
Deciduous Plants 2 gal. containers Spreading Cotoneaster, Cotoneaster divaricata	a. % Marketed	90%	95%	.1 ov
	b. Years of plant growth to market 18-24" spread*	3 yrs.	2 yrs.	.5 ha
	c. % of crop reaching 18-24" spread at market time	90%	95%	.1 ov
	d. Container plants per 1000 sq. ft.	250	275	.0 pl pl
	e. % Unblemished (free of insects, disease and mechanical injury)	90%	95%	.1 ov
	f. % Conforming to AAN Standard	80%	90%	.0 80

* Plant growth must include age of liner plus years of growth in the c

ficiency	Min. Efficiency Level for Determining Score (average)	Max. Efficiency Level for Determining Score (superior)	Method of Determining Score
% Marketed	90%	95%	.1 point for every % point over 90
Years of plant growth to market 18-24" spread*	3 yrs.	2 yrs.	.5 point for every year of harvest under 2 years
% of crop reaching 18-24" spread at market time	90%	95%	.1 point for every % point over 90%
Container plants per 1000 sq. ft.	250	275	.02 point/plant over 250 plants - not to exceed 275 plants/1000 sq. ft.
% Unblemished (free of insects, disease and mechanical injury)	90%	95%	.1 point for every % point over 90%
% Conforming to AAN Standard	80%	90%	.05 point for every 1% over 80%

Plant growth must include age of liner plus years of growth in the container.

Cost Accounting - Nursery Production
Container Grown Plants, Spreading Cotoneaster, Cotoneaster divaricata

1. Cost of lining out stock from 5¢ to 35¢ per plant. Use actual price paid.
2. Cost of containers.
3. Cost of growing medium about $14 per cubic yard.
4. Cost of land per 1000 sq. ft.
5. Cost of labor chargeable to this crop.
6. Overhead (supplies, equipment) per 1000 sq. ft.
7. Marketing cost - about 20% of sum of all other costs.

Analysis of Container Grown Plants
Spreading Cotoneaster, Cotoneaster divaricata

Name ______________________ Date Started __________ Ended __________

School ______________________ Genus __________ Species __________

County ______________________ Total Receipts ______________________ x

Sq. ft. used ______________________ a Total Expenses ______________________ y

No. sold ______________________ b Labor-Mgmt. Income ______________________ z
(x - y = z)

No. per 1000 sq. ft. ______________________ Income/1000 sq. ft. ______________________
(b ÷ a) x 1000 (z ÷ a) x 1,000

Poor Average Superior

1. 80% 90% 100%
% Marketed

2. 4 yrs. 3 yrs. 2 yrs.
Years of Growth Until Marketed at 18-24" Spread

3. 85% 90% 95%
% of Plants Reaching 18-24" Spread Grade at Harvest

4. 225 250 275
No. Plants per 1000 sq. ft.

5. Poor Good Excellent
Symmetrical Branching

6. 80% 90% 95%
% Blemish Free

7. 70% 80% 90%
% Conforming to AAN Standard

Place a red "G" on each line scale at goal set. Place a red "A" on each line scale at efficiency achieved.

Practices and conditions which limited the production and income:	Practices and conditions which contributed to superior efficiency:
______________________	______________________
______________________	______________________
______________________	______________________

Approved Practices - Container Grown Plants
Deciduous and Evergreen Ground Covers in 6" Cans
Carpet Bugle, Rockspray Cotoneaster, English Ivy, Creeping Juniper, Japanese Spurge

Practice	Reference
1. Crop Planning, Rotation Schedule	P. 144-150, 169
2. Container Selection	P. 145-147
3. Soil Preparation	P. 150-153
4. Planting	P. 153-154
5. Staking	P. 117-120
6. Watering	P. 154-158
7. Pruning	P. 160-161
8. Fertilizing	P. 158-160
9. Pest Control	P. 161-162
10. Environmental Control	P. 47
11. Winter Protection	P. 162-164
12. Grading and Market Preparation	P. 164, 177-178, 184-188

Reference: NURSERY PRODUCTION, A STUDENT HANDBOOK, PSU, 1971

Goals Stated in Relation to Efficiency
Container Grown Deciduous and Evergreen Ground Covers in 6" Cans

Efficiency Factors	Efficiency Standards	
	Average	Superior
1. % Marketed	90%	95%
2. Years of plant growth to market a 12-15" plant	1	1
3. No. of plants/1000 sq. ft.	2750	3000
4. Symmetrical Form	Good	Excellent
5. Blemish Free Plants	90%	95%
6. % Conforming to AAN Standard	80%	90%

Contest	Efficiency Factors	Min. Efficiency Level for Determining Score (average)	Max. Efficiency Level for Determining Score (superior)
Container Grown Deciduous and Evergreen Ground Cover Plants in 6" Cans	a. % Marketed	90%	95%
	b. Years of plant growth to market at 12-15"	2 yrs.	1 yr.
	c. % of crop reaching 12-15" height at market time	90%	95%
	d. Container plants per 1000 sq. ft.	2750	3000
	e. % Unblemished (free of insect, disease, and mechanical injury)	90%	95%
	f. % of plants conforming to AAN Standard	80%	90%

E-172

ficiency Factors	Min. Efficiency Level for Determining Score (average)	Max. Efficiency Level for Determining Score (superior)	Method of Determining Score
% Marketed	90%	95%	.1 point for every % point over 90%
Years of plant growth to market at 12-15"	2 yrs.	1 yr.	.5 point for every month of harvest under 1 year
% of crop reaching 12-15" height at market time	90%	95%	.1 point for every % point over 90%
Container plants per 1000 sq. ft.	2750	3000	.01 point/plant over 2750 plants - not to exceed 3000 plants/1000 sq. ft.
% Unblemished (free of insect, disease, and mechanical injury)	90%	95%	.1 point for every % point over 90%
% of plants conforming to AAN Standard	80%	90%	.05 point for every % point over 80%

Cost Accounting - Nursery Production
Container Grown Deciduous and Evergreen Ground Covers in 6" Cans, Carpet Bugle, Rockspray Cotoneaster, English Ivy, Creeping Juniper, Japanese Spurge

1. Cost of lining out stock from 5¢ to 35¢ per plants.
2. Cost of containers.
3. Cost of growing medium about $14 per cubic yard.
4. Cost of land per 1000 sq. ft.
5. Cost of labor chargeable to this crop.
6. Overhead (supples, equipment) per 1000 sq. ft.
7. Marketing cost - about 20% of sum of all other costs.

Analysis of Container Grown Plants
Deciduous and Evergreen Groundcovers in 6" Cans

Name ______________________ Date Started __________ Ended __________

School ______________________ Genus __________ Species __________

County ______________________ Total Receipts ______________________ x

Sq. ft. used ________________ a Total Expenses ______________________ y

No. sold ____________________ b Labor-Mgmt. Income ______________________ z
(x - y = z)

No. per 1000 sq. ft. ____________ Income/1000 sq. ft. ______________________
(b ÷ a) x 1000 (z ÷ a) x 1,000

	Poor	Average	Superior	
1.	80%	90%	100%	% Marketed
2.	3 yrs.	2 yrs.	1 yr.	Years of Plant Growth to Market at 18-24" Height
3.	70%	80%	90%	% of crop Reaching 18 to 24" Grade at Harvest
4.	2500	2750	3000	No. Plants per 1000 sq. ft.
5.	Poor	Good	Excellent	Symmetrical Branching
6.	80%	90%	95%	% Blemish Free
7.	70%	80%	90%	% Conforming to AAN Standard

Place a red "G" on each line scale at goal set. Place a red "A" on each line scale at efficiency achieved.

Practices and conditions which limited the production and income:	Practices and conditions which contributed to superior efficiency:

Approved Practices - Container Grown
Deciduous and Evergreen Vines in 6" Cans
European Bittersweet, Clematis, Wintercreeper Euonymus, English Ivy

Practice	Reference
1. Crop Planning, Rotation Schedule	P. 144-150, 169
2. Container Selection	P. 145-147
3. Soil Preparation	P. 150-153
4. Planting	P. 153-154
5. Staking	P. 117-120
6. Watering	P. 154-158
7. Pruning	P. 160-161
8. Fertilizing	P. 158-160
9. Pest Control	P. 161-162
10. Environmental Control	P. 47
11. Winter Protection	P. 162-164
12. Grading and Market Preparation	P. 164, 177-178, 184-188

Reference: NURSERY PRODUCTION, A STUDENT HANDBOOK, PSU, 1971

Goals Stated in Relation to Efficiency
Container Grown Plants, Deciduous and Evergreen Vines in 6" Cans

Efficiency Factors	Efficiency Standards Average	 Superior
1. % Marketed	90%	95%
2. Years of plant growth to market a 12" to 15" plant	2	1
3. No. of plants/1000 sq. ft.	2750	3000
4. Symmetrical Form	Good	Excellent
5. Blemish free plants	90%	95%
6. % Conforming to AAN Standard	80%	90%

Contest	Efficiency Factors	Min. Efficiency Level for Determining Score (average)	Max. Efficiency Level for Determining Score (superior)
Container Grown Deciduous and Evergreen Ground Cover Plants in 6" Cans	a. % Marketed	90%	95%
	b. Years of plant growth to market at 12-15"	2 yrs.	1 yr.
	c. % of crop reaching 18-24" height at market time	90%	95%
	d. Container plants per 1000 sq. ft.	2750	3000
	e. % Unblemished (free of disease, insect, and mechanical injury)	90%	95%
	f. % of crop conforming to AAN Standard	80%	90%

Efficiency Factors	Min. Efficiency Level for Determining Score (average)	Max. Efficiency Level for Determining Score (superior)	Method of Determinin Score
a. % Marketed	90%	95%	.1 point for every % poi over 90%
b. Years of plant growth to market at 12-15"	2 yrs.	1 yr.	.5 points for every mont of harvest under 1 year
c. % of crop reaching 18-24" height at market time	90%	95%	.1 point for every % poi over 90%
d. Container plants per 1000 sq. ft.	2750	3000	.01 point/plant over 275 plants not to exceed 3000 plants/1000 sq. ft.
e. % Unblemished (free of disease, insect, and mechanical injury)	90%	95%	.1 point for every % point over 90%
f. % of crop conforming to AAN Standard	80%	90%	.05 point for every % point over 90%

Cost Accounting - Nursery Production
Container Grown Deciduous and Evergreen Vines in 6" Cans
European Bittersweet, Clematis, Wintercreeper Euonymus, English Ivy

1. Cost of lining out stock from 5¢ to 35¢ per plant. Use actual price paid.

2. Cost of container.

3. Cost of growing medium about $14 per cubic yard.

4. Cost of land per 1000 sq. ft.

5. Cost of labor chargeable to this crop.

6. Overhead (supplies, equipment) per 1000 sq. ft.

7. Marketing cost - about 20% of sum of all other costs.

Analysis of Container Grown Plants
Deciduous and Evergreen Vines in 6" Cans

Name ______________________ Date Started __________ Ended __________

School ______________________ Genus __________ Species __________

County ______________________ Total Receipts ______________________ x

Sq. ft. used ______________________ a Total Expenses ______________________ y

No. sold ______________________ b Labor-Mgmt. Income ______________________ z
(x - y = z)

No. per 1000 sq. ft. ______________ Income/1000 sq. ft. ______________
(b ÷ a) x 1000 (z ÷ a) x 1,000

Poor Average Superior

1. 80% 90% 100%
% Marketed

2. 3 yrs. 2 yrs. 1 yr.
Years of Growth Until Marketed at 18-24" Height

3. 70% 80% 90%
% of Crop Conforming to 18-24" Height Grade at Harvest

4. 2500 2750 3000
No. Plants per 1000 sq. ft.

5. Poor Good Excellent
Symmetrical Branching

6. 80% 90% 95%
% Blemish Free

7. 70% 80% 90%
% Conforming to AAN Standard

Place a red "G" on each line scale at goal set. Place a red "A" on each line scale at efficiency achieved.

Practices and conditions which limited the production and income:

Practices and conditions which contributed to superior efficiency:

Approved Practices - Container Grown Plants
Herbaceous Perennial Flowers in 6" Cans
Garden Chrysanthemum, Delphinium, Daylily, Peony, Oriental Poppy

Practice	Reference
1. Crop Planning, Rotation Schedule	P. 144-150, 169
2. Container Selection	P. 145-147
3. Soil Preparation	P. 150-153
4. Planting	P. 153-154
5. Staking	P. 117-120
6. Watering	P. 154-158
7. Pruning	P. 160-161
8. Fertilizing	P. 158-160
9. Pest Control	P. 161-162
10. Environmental Control	P. 47
11. Winter Protection	P. 162-164
12. Grading and Market Preparation	P. 164, 177-178, 184-188

Reference: NURSERY PRODUCTION, A STUDENT HANDBOOK, PSU, 1971

Goals Stated in Relation to Efficiency
Container Grown Herbaceous Perennial Flowers in 6" Cans

Efficiency Factors	Efficiency Standards Average	Efficiency Standards Superior
1. % Marketed	90%	95%
2. Years of plant growth to market a 12" to 15" plant	1	1
3. No. of plants/1000 sq. ft.	2750	3000
4. Symmetrical Form	Good	Excellent
5. Blemish free plants	90%	95%

Contest	Efficiency Factors	Min. Efficiency Level for Determining Score (average)	Max. Efficiency Level for Determining Score (superior)	
Herbaceous Perennial Flowers in 6" Cans	a. % Marketed	90%	95%	.1 ove
	b. % of crop reaching 12-15" height at market time	90%	95%	.1 ove
	c. Years of plant growth to market at 12-15"	1 yr.	1 yr.	.1 har
	d. Container plants per 1000 sq. ft.	2750	3000	.01 pla pla
	e. % Unblemished (free of insect, disease, and mechanical injury)	90%	95%	.1 ove

ficiency Factors	Min. Efficiency Level for Determining Score (average)	Max. Efficiency Level for Determining Score (superior)	Method of Determining Score
% Marketed	90%	95%	.1 point for every % point over 90%
% of crop reaching 12-15" height at market time	90%	95%	.1 point for every % point over 90%
Years of plant growth to market at 12-15"	1 yr.	1 yr.	.1 point for every month of harvest under 1 yr.
Container plants per 1000 sq. ft.	2750	3000	.01 point/plant over 250 plants - not to exceed 275 plants/1000 sq. ft.
% Unblemished (free of insect, disease, and mechanical injury)	90%	95%	.1 point for every % point over 90%

Cost Accounting - Nursery Production
Container Grown Herbaceous Perennial Flowers in 6" Cans
Garden Chrysanthemum, Delphinium, Daylily, Peony, Oriental Poppy

1. Cost of lining out stock from 10¢ to 35¢ per plant.
2. Cost of container.
3. Cost of growing medium about $14 per cubic yard.
4. Cost of land per 1000 sq. ft.
5. Cost of labor chargeable to this crop.
6. Overhead (supplies, equipment) per 1000 sq. ft.
7. Marketing cost - about 20% of sum of all other costs.

Analysis of Container Grown Plants
Herbaceous Perennial Flowers in 6" Cans

Name ______________________ Date Started ____________ Ended ____________

School ______________________ Genus ____________ Species ____________

County ___ ______________ Total Receipts ______________________ x

Sq. ft. used ______________ a Total Expenses ______________________ y

No. sold ______________ b Labor-Mgmt. Income ______________________ z
(x - y = z)

No. per 1000 sq. ft. ______________
(b ÷ a) × 1000

Income/1000 sq. ft. ______________________
(z ÷ a) × 1,000

	Poor	Average	Superior	
1.	80%	90%	100%	% Marketed
2.	2 yrs.	1 yr.	1 yr.	Years of Growth to Reach 12-15" Height
3.	70%	80%	90%	of Crop Conforming to 12-15" Height Grade at Harvest
4.	2500	2750	3000	No. Plants per 1000 sq. ft.
5.	Poor	Good	Excellent	Symmetrical Branching
6.	80%	90%	95%	% Blemish Free

Place a red "G" on each line scale at goal set. Place a red "A" on each line scale at efficiency achieved.

Practices and conditions which limited the production and income:	Practices and conditions which contributed to superior efficiency:

Prepared by the Department of Agricultural Education, The Pennsylvania State University, in cooperation with the Pennsylvania Department of Education and Pennsylvania Vocational Agriculture Teachers.

Supervised Occupational Experience Record Forms
for
Ornamental Horticulture
(Preliminary)
1974

TURFGRASS MAINTENANCE, ESTABLISHMENT, PRODUCTION - F 1-28
Turfgrass Maintenance - Residential F 2-8
Golf Course Maintenance - Employee F 9-14
Turfgrass Establishment F 15-20
Sod Production F 21-26

To be used with any production, occupational or work experience record book.

Department of Agricultural Education
The Pennsylvania State University
in cooperation with
Bureau of Vocational Education
Pennsylvania Department of Education

Using The Forms

The five record sheet included in this unit are intended to be used with any production, occupational or work experience record book for high school vocational agriculture programs.

Approved Practices gives specific references to production or service practices that are generally accepted in industry as giving superior results if appropriately applied. A particular business firm might use variations of some of these practices because of unusual local conditions. Students carrying out production projects should find these references especially helpful. Students in agricultural production or services work experience will find them useful guides to what will be expected of them on the job.

Goals are stated in relation to efficiency. They are drawn up on the basis of comparisons of superior achievement with average achievement. The goals given are considered realistic in terms of production enterprises or work experience in production or services occupations. Successful businesses rank somewhere between "average" and "superior" in their goals.

The Efficiency Factor form provides a means for giving a numerical score on goal achievement. It is equally applicable to production enterprises, production occupations or service occupations. The scores are used as one base for comparisons in the judging of record books in regional and state record book contests.

Cost Accounting record forms serve as a guide for calculating the costs and profit in a production enterprise or a production experience. These figures, together with production figures are used in the analysis of the enterprise.

The Employment Achievement form is used in place of the Cost Accounting form when the experiences involve employment in a service occupation rather than production occupation.

The Analysis form should be marked at the beginning of the experience program with a "G" to indicate the goal that a student has set for himself. The same scales are marked with an "A" to indicate actual achievement at the end of the experience program. The analysis sheet provides for an evaluation of the approved practices used and their relationship to production or service and income.

Example of the Use of Efficiency Factors and Production Goals

The Pennsylvania Agricultural Production Program Record Book provides space for the student to list appropriate efficiency factors for each productive enterprise. In the example below, the figures in the column "Local Efficiency Standards" will have been obtained through group study by the students with the help of the teacher. An analysis of records of similar enterprises completed in previous years by students in the same school will also serve as a guide.

PRODUCTION GOALS: Potted Chrysanthemum ENTERPRISE

Efficiency Factor	Local Efficiency Standards Average	Superior	Student Goal	Student Achievement
Percent marketed	95%	100%	100%	97%
Number of 6" pots per 100 sq. ft. of bench space	75	100*	100	98
Number of blooms/6" pot	18	24	24	22
Percent of pots in 16" to 18" height range including pot marketed	90	95	95%	92%

*Optimum Number

Approved Practices
Turfgrass Maintenance - Residential

Practice	Reference
1. Mowing	P. 48-51
2. Soil Sampling	P. 38-39
3. Fertilizing	P. 39-48
4. Watering	P. 52-55
5. Dethatching	P. 51, 109-110
6. Aerating	P. 51-52, 97-98
7. Insect and Disease Control	P. 84-92
8. Weed Control	P. 55-83
9. Trimming and edging	P. 51
10. Resodding and Reseeding	P. 144-145

Reference: TURFGRASS,MAINTENANCE AND ESTABLISHMENT - A STUDENT HANDBOOK, PSU, 1968

Goals Stated in Relation to Efficiency
Turfgrass Maintenance - Residential

Efficiency Factors	Efficiency Standards Average	 Superior
1. Profit	10%	15%
or 1. Employer satisfaction	good (90)	excell. (100)
2. Maintain lawn height at 1 1/2 inches	remove 1/2"	remove 1/4"
3. Maintain weed-free	2% weeds	0% weeds
4. Maintain disease-free	medium	none
5. Maintain insect free	medium	none
6. Maintain good color	medium green	dark green
7. Maintain good density	medium dense	very dense
8. Maintain neat appearance	good	excellent

Contest	Efficiency Factors	Min. Efficiency Level for Determining Score (average)	Max. Efficiency Level for Determin Score (superior)
Turfgrass Maintenance - Residential	a. Profit	10%	15%
	or a. Employer Satisfaction	good (90)	excellent (100)
	b. Mowing rate per hour	4,000 sq. ft./hr.	5,000 sq. ft./hr.
	c. Material application per hour liquid (Knap Sack)	3,000 sq. ft./hr.	4,000 sq. ft./hr.
	granular (Broadcast spreader)	8,000 sq. ft./hr.	10,000 sq. ft./hr.
	d. Trimming (Powered Equipment)	500 ft./hr.	700 ft./hr.
	e. Lawn Sweeping (with Lawn Sweeper Machine)	4,000 sq. ft./hr.	5,000 sq. ft./hr.

ficiency Factors	Min. Efficiency Level for Determining Score (average)	Max. Efficiency Level for Determining Score (superior)	Method of Determining Score
Profit	10%	15%	.1 point for every % over 10%
Employer Satisfaction	good (90)	excellent (100)	.1 point for every point over 90%
Mowing rate per hour	4,000 sq. ft./hr.	5,000 sq. ft./hr.	.2 point for every 100 sq. ft. over 4,000 sq. ft.
Material application per hour liquid (Knap Sack)	3,000 sq. ft./hr.	4,000 sq. ft./hr.	.2 point for every 100 sq. ft. over 3,000 sq. ft.
granuiar (Broadcast spreader)	8,000 sq. ft./hr.	10,000 sq. ft./hr.	.5 point for every 1000 sq. ft. over 8,000
Trimming (Powered Equipment)	500 ft./hr.	700 ft./hr.	.5 point for every 100 sq. ft. over 500 sq. ft.
Lawn Sweeping (with Lawn Sweeper Machine)	4,000 sq. ft./hr.	5,000 sq. ft./hr.	.05 point for every 100 sq. ft. over 4,000 sq. ft.

Cost Accounting - Turfgrass Maintenance - Residential

1. Cost of supplies, fertilizer, herbicides, fungicides, insecticides, limestone. Charge or costs of quantities applied for 1000 sq. ft.

2. Equipment use charge - use hourly rate per machine based on depreciation rate and estimated total hours of use the machine will provide until replaced.

3. Wages, based on hourly rate. It could be estimated per 1000 sq. ft. for particular task.

4. Overhead - transportation, taxes, telephone, office services, etc.

5. Profit - difference between income and costs.

Employment Achievement

Turfgrass Maintenance, Residential - Employee

1. Personal Satisfaction (Do you enjoy the Work?)

Exc. Good Poor

2. Monetary Increases (After 3 to 6 Months)

Exc. Good Poor

3. Fringe Benefits (Insurance, Retirement, Other)

Exc. Good Poor

4. Opportunity for Advancement (In 1 To 5 Years)

Exc. Good Poor

5. Variety of educational experience according to students occupational goals

Exc. Good Poor

Analysis of Turfgrass Maintenance-Residential

Name ____________________ Number of Customers ____________________

School ____________________ Name of employer ____________________

County ____________________ Address ____________________

Address ____________________ ____________________

____________________ Total Receipts ____________________

Date Started ________ Ended ________ Total Expenses ____________________

Total Hours ____________________ Profit (x-y) ____________________

Poor	Average	Superior
5%	10%	15%

1. Profit

or

Poor	Good	Excellent

1. Employer Satisfaction

Poor	Good	Excellent

2. Maintenance of Lawn Height

Poor	Good	Excellent

3. Pest Free (weeds, insects, diseases) Maintenance

Poor	Good	Excellent

4. Maintenance of Good Color

Poor	Good	Excellent

5. Maintenance of Density

Poor	Good	Excellent

6. Maintenance of Heat Appearance

Poor	Good	Excellent

7. Customer Satisfaction

Place a red "G" on each line scale at goal set. Place a red "A" on each line scale at efficiency achieved.

Practices and conditions that limited achievement:	Practices and conditions which contributed to superior achievement:
______________________________	______________________________
______________________________	______________________________
______________________________	______________________________

Approved Practices
Golf Course Maintenance - Employee

Practice	Reference
1. Whipping or Poling	P. 108
2. Mowing:	P. 106-198
Fairways	P. 106-107
Greens	P. 107-108
Tees	P. 107
Roughs	P. 106
3. Soil Sampling	P. 38-39
4. Fertilization	P. 104-105
5. Sand Traps	P. 112
6. Irrigation and Syringing	P. 110-111
7. Cap and T Marker Changing	P. 111-113
8. Dethatching	P. 109-110
9. Aerating	P. 108-109
10. Top Dressing	P. 109
11. Disease Control	P. 84-87
12. Insect Control	P. 87-92
13. Trimming and Edging	P. 51
14. Resodding and Reseeding	P. 144
15. Weed Control	P. 55-83

Reference: TURFGRASS MAINTENANCE AND ESTABLISHMENT - A STUDENT HANDBOOK, PSU 1968.

Goals Stated in Relation to Efficiency
Golf Course Maintenance Employee

	Efficiency Standards	
Efficiency Factors	Average	Superior
1. Maintain grass heights		
Roughs	3" to 6"	
Fairways	1 3/4" to 2"	
Tees	1/2" to 1"	1/4" to 1/2"
Greens	none	3/16" to 5/16"
2. Wear distribution		
Cups changed	daily	twice daily
Ball marks and divits	weekly	daily repair
3. Sand trap raking	every four days	every two days
4. Trimming, collars, trap edges, walks, etc.	weekly	twice weekly
5. Free of insects, diseases and weeds	some	none
6. Good color and dense growth	good	excellent

Contest	Efficiency Factors	Min. Efficiency Level for Determing Score (average)	Max. Efficiency Level for Determing Score (superior)	M De
Golf Course Maintenance-Employee	a. Mowing, 18 holes per day*			
	(1) Rough	60 acres/day	80 acres/day	.5 p ov
	(2) Fairways	80 acres/day	100 acres/day	.5 p ov
	(3) Greens (riding m.)	4 hrs/18 holes	3 hrs/18 holes	.5 p le
	(4) Tees (hand m.)	4 hrs/18 holes	3 hrs/18 holes	.5 p le
	b. Material application (powered)			
	(1) liquid - greens	4 hrs/18 greens	3 hrs/18 greens	.5 p le
	- fairways	8 hrs/18 fairways	10 hrs/18 fairways	.5 p th
	(2) granular - greens	5 hrs/18 greens	4 hrs/18 greens	.5 p th
	-50 acre fairway	12 hrs.	8 hrs.	.5 p th
	c. Topdressing/green	2 hrs.	1 hr.	.5 p le
	d. Aerating/green	60 minutes	45 minutes	.5 p le
	e. Cup, Tee marker changing, 18 holes	2 hrs.	1 1/2 hrs.	.5 p le
	f. Trap raking, powered, 18 holes	6 hrs.	4 hrs.	.5 p th
	g. Verticutting, slicing, spiking-per green, hand machine	30 minutes	20 minutes	.5 p le

* Depending upon terrain and equipment.

iency Factors	Min. Efficiency Level for Determing Score (average)	Max. Efficiency Level for Determing Score (superior)	Method of Determining Score
owing, 18 holes per ay*			
1) Rough	60 acres/day	80 acres/day	.5 point, every 10 acres over 60
2) Fairways	80 acres/day	100 acres/day	.5 point, every 10 acres over 80
3) Greens (riding m.)	4 hrs/18 holes	3 hrs/18 holes	.5 point, every 1/2 hr. less than 4
4) Tees (hand m.)	4 hrs/18 holes	3 hrs/18 holes	.5 point every 1/2 hr. less than 4
aterial application (powered)			
1) liquid - greens	4 hrs/18 greens	3 hrs/18 greens	.5 point every 1/2 hr. less than 4
- fairways	8 hrs/18 fairways	10 hrs/18 fairways	.5 point every hour less than 8
2) granular - greens	5 hrs/18 greens	4 hrs/18 greens	.5 point every hour less than 12
-50 acre fairway	12 hrs.	8 hrs.	.5 point every hour less than 12
opdressing/green	2 hrs.	1 hr.	.5 point every half hour less than 2
erating/green	60 minutes	45 minutes	.5 point every 15 minutes less than 60
up, Tee marker changing, 18 holes	2 hrs.	1 1/2 hrs.	.5 point every 1/2 hour less than 2
rap raking, powered, 18 holes	6 hrs.	4 hrs.	.5 point every hour less than 6
erticutting, slicing, spiking-per green, hand machine	30 minutes	20 minutes	.5 point every 10 minutes less than 30

rain and equipment.

EMPLOYMENT ACHIEVEMENT
Golf Course Maintenance - Employee

1. Personal satisfaction (Do you enjoy the work?)

____
Exc. Good Poor

2. Monetary increases (After 3 to 6 months)

____
Exc. Good Poor

3. Fringe benefits (Insurance, retirement, other)

____
Exc. Good Poor

4. Opportunity for advancement (in 1 to 5 years)

____
Exc. Good Poor

5. Variety of educational experiences according to students occupational goals

____
Exc. Good Poor

Analysis of Golf Course Maintenance-Employee

Name ______________________ Date Started __________ Ended __________

School ______________________ Total Hours ______________________

County ______________________ Income ______________________

Address ______________________ Employer ______________________

______________________ ______________________

	Poor Poor	Average Good	Superior Excellent
1.		Supervisor's Rating of Performance	
	Greater than 6"	3"	4"
2.		Roughs	
	Greater than 2"	2"	1 3/4"
3.		Fairways	
	1/4"	1/2"	3/4"
4.		Tees	
	5/16"	1/4"	3/16"
5.		Greens	
		Amount of grass removed per mowing	
	0%	2%	5%
6.		Approximate % of area in weeds	
	Excellent	Good	Poor
7.		Turfgrass Density	
	None	Medium	Severe
8.		Insect and Disease Damage	
	Excellent	Good	Poor
9.		Neatness	

Place a red "G" on each line scale at goal set. Place a red "A" on each line scale at efficiency achieved.

Practices and conditions that limited achievement:	Practices and conditions which contributed to superior achievement:
______________________	______________________
______________________	______________________

Approved Practices
Turfgrass Establishment

Practice	Reference
1. Grading and drainage	P. 116-122
2. Soil testing	P. 38-39
3. Soil preparation, applying fertilizer and physical conditioners	P. 112-130
4. Species and cultivar selection	P. 132-136
5. Seeding	P. 130-132, 136-141
6. Sodding	P. 142
7. Sprigging, stolonizing, or plugging	P. 141-142
8. Care of New Grass	P. 143
9. Watering	P. 143
10. Mulching	P. 140-141
11. Renovation	P. 144-145
12. Pest Control (weeds, insects, diseases)	P. 55-92

Reference: TURFGRASS MAINTENANCE AND ESTABLISHMENT - A STUDENT HANDBOOK, PSU 1968.

Goals Stated in Relation to Efficiency

Turfgrass Establishment

Efficiency Factors	Efficiency Standards	
	Average	Superior
1. Profit	10%	15%
2. Sod established in	4 weeks	3 weeks
3. Seeding established 3" high	6 weeks	5 weeks
4. Plugging established	6 weeks	4 weeks
5. Spriging established	6 weeks	4 weeks
6. Turfgrass density	good	excellent
7. Customer satisfaction	good	excellent

Contest	Efficiency Factors	Min. Efficiency Level for Determining Score (Average)	Max. Efficiency Level for Determini Score (Superior)
Turfgrass Establishment	1. Percent Profit	10%	15%
	1. Sod established in:	4 weeks	3 weeks
	2. Seeding established in:	6 weeks	5 weeks
	3. Plugging established in:	6 weeks	4 weeks
	4. Spriging established in:	6 weeks	4 weeks
	5. Turfgrass density	good (90)	excellent (100
	6. Customer satisfaction	good (90)	excellent (100

iciency Factors	Min. Efficiency Level for Determining Score (Average)	Max. Efficiency Level for Determining Score (Superior)	Method of Determining Score
Percent Profit	10%	15%	.2 points for each % over 10%
Sod established in:	4 weeks	3 weeks	.1 point for each day less than 28
Seeding established in:	6 weeks	5 weeks	.1 point for each day less than 35
Plugging established in:	6 weeks	4 weeks	.5 point for each day less than 28
Spriging established in:	6 weeks	4 weeks	.5 point for each day less than 28
Turfgrass density	good (90)	excellent (100)	.1 point for rating each point over 90
Customer satisfaction	good (90)	excellent (100)	.1 point for rating each point above 90

Cost Accounting - Turfgrass Establishment

1. Cost of plant materials per 100 sq. ft.

    (a) seed
    (b) sod
    (c) sprigs
    (d) plugs

2. Cost of grading, machinery hourly rate, plus operator hourly rate, per 100 sq. ft.

3. Cost of supplies: fertilizer, limestone, straw mulch, soil hauled in etc. per 100 sq. ft.

4. Labor, other than grading machine operator.

5. Equipment use charge, hourly rate, (based on depreciation).

6. Overhead: transportation, telephone, office services, taxes, etc.

7. Range of usual charges:

    sodding - 25¢ to 35¢/sq. ft.
    seeding - 10¢ to 15¢/sq. ft.
    plugging - 20¢ to 30¢/sq. ft.
    sprigging - 20¢ to 30¢/sq. ft.

Analysis of Turfgrass Establishment

Name________________ Date Started__________ Ended__________

School________________ Total Hours__________________

County________________ Number of Customers______________

Address________________ Total Receipts______________x

________________ Total Expenses______________y

Profit (x-y)______________

	Poor	Average	Superior
1. Profit	5%	10%	15%
2. Sod Establishment-Weeks	3 wks.	4 wks.	5 wks.
2. Seeding Established to 3" high-weeks	5 wks.	6 wks.	7 wks.
2. Plugging Established-weeks	4 wks.	6 wks.	8 wks.
2. Spriging Established-weeks	4 wks.	6 wks.	8 wks.
2. Turfgrass Density	excellent	good	poor
3. Customer Satisfaction		good	poor

Place a red "G" on each line scale at goal set. Place a red "A" on each line scale at efficiency achieved.

Practices and conditions that limited achievement:	Practices and conditions that contributed to superior achievement:

Approved Practices
Sod Production

Practice	Reference
1. Site selection	--
2. Rotations	--
3. Soil testing, grading, preparation	B p. 38-39, 112-130
4. Crop selection	B p. 132-136
5. Seeding	B p. 130-132, 136-141
6. Fertilizing	B p. 39-48
7. Watering	B p. 52-55
8. Pest Control, weeds, insects, diseases	B p. 55-92
9. Mowing	B p. 48-51
10. Harvesting	A p. 124
11. Preparation for Market	A p. 124
12. Transportation	

Reference: A. - TURF MANAGEMENT, 1962, Musser, McGraw-Hill
B. - TURFGRASS MAINTENANCE AND ESTABLISHMENT. A STUDENT HANDBOOK, PSU 1968.

Goals Stated in Relation to Efficiency

Sod Production

Efficiency Factors	Efficiency Standards Average	 Superior
Months of growth to market	24	18
Percent marketed	85	95
Percent marketed within specification for state certification	85	95

Contest	Efficiency Factor	Min. Efficiency Level for Determining Score (average)	Max. Efficiency Level for Determining Score (superior)
Sod	a. Percent marketed	85	95
	b. Months of growth to market	24	18
	c. Percent marketed which meets specification for state certification	85	95

Factor	Min. Efficiency Level for Determining Score (average)	Max. Efficiency Level for Determining Score (superior)	Method for Determining Score
marketed	85	95	.075 point for each 1% over 85%
of growth to	24	18	2 points for each month less than 24
marketed which pecification for ertification	85	95	.075 point for each 1% over 85%

Cost Accounting - Sod Production

1. Land cost
2. Seed cost
3. Supplies
4. Labor
5. Equipment
6. Overhead
7. Marketing cost, (20% of production cost)

ANALYSIS OF SOD PRODUCTION

Name ______________________ Date Started __________ Ended __________

School ______________________ Variety ______________________

County ______________________ Total receipts ______________________ x
(including ending inventory)

No. of sq. ft. of space __________ a

Total expenses ______________________ y
(including beginning inventory)

No. of sq. ft. harvested __________

Labor and management income __________ z
(x - y = z)

Income/1000 sq. ft. __________
a ÷ (a ÷ 1000)

	Poor	Average	Superior
1. Percent Marketed	75	85	95
2. Months Required to Harvest	30	24	18
3. Percent Meets Specification for State Certification	75	85	95

Place a red "G" on each line scale at goal set. Place a red "A" on each line scale at efficiency achieved.

Practices and conditions which limited the production and income:

____

____

____

Practices and conditions which contributed to superior efficiency:

____

____

____

Prepared by The Department of Agricultural Education, The Pennsylvania State University, in cooperation with the Pennsylvania Department of Education and Pennsylvania Vocational Agricultural Teachers.

APPENDIX G

LANDSCAPE MAINTENANCE AND CONSTRUCTION MANUAL

Outline

Part I. Job Opportunities in Landscape Construction

- Landscape Worker
- Garden Center Worker
- Garden Center Salesman
- Landscape Foreman
- Park Foreman
- Landscape Contractor
- Garden Center Manager
- Grounds Superintendent

Part II. Landscape Maintenance

- Chapter 1: Lawn Maintenance
    - Weed Identification
    - Turf Identification
    - Cultural Practices
        - pest control
        - mowing, trimming, and edging
        - fertilizing and liming
        - aeration, dethatching, and verti cutting
        - irrigation
        - renovation: seeding and vegetative
        - soil conditioners
- Chapter 2: Bed Maintenance (annual, perennial, ground cover)
    - Plant Identification
    - Cultural Practices
        - thinning and transplanting
        - fertilization
        - renovation
        - watering
        - pest control
        - soil conditioners and mulches
- Chapter 3: Shrub Maintenance
    - Plant Identification
    - Cultural Practices
        - pruning (thinning out, heading back, shearing and root pruning
        - fertilizing and liming
        - soil conditioners and mulches
        - pest control
        - watering
        - transplanting

Chapter 4: Tree Maintenance*

- Plant Identification
- Cultural Practices
  - pruning (thinning out, heading back, root pruning)
  - fertilizing and liming (punch bar, foliar, and tree injectio
  - soil conditioners and mulches
  - pest control (identification, materials available and safe application procedures)
  - watering
  - transplanting

*If any extensive tree work is to be done, the individual should have further training.

Chapter 5: Maintenance of Paved Areas and Structures

- Paved Area Maintenance
  - cleaning
  - repair
  - snow removal
- Landscape Structures Maintenance
  - painting
  - minor repair
    - cement patching
    - park replacement
  - cleaning

Chapter 6: Safe Use and Maintenance of Tools, Equipment and Machiner

- Safe Hand Tool Use and Care
  - soil handling tools
    - shovel
    - mattocks and picks
    - digging iron
    - rales
  - cutting tools
    - saws
    - axes
    - shears

Safe Equipment Operation

- walk behind mowers
  - safety and maintenance check list
  - use of safety apparatus
  - proper methods and techniques in relation to situation
- riding mowers
  - safety and maintenance check list
  - use of safety apparatus
  - proper methods and techniques in relation to situation
- power trimming and edging equipment
  - safety and maintenance check list
  - use of safety apparatus
  - proper methods and techniques in relation to situation
- spraying and spreading equipment
  - safety and maintenance check list
  - use of safety apparatus
  - proper methods and techniques in relation to situation
- garden tractors and attachments (rototiller, trailer, blade, snow blower)
  - safety and maintenance check list
  - use of safety apparatus
  - proper methods and techniques in relation to situation
- turf renovation equipment (dethatchers, spikers, aerators, vacuums, blowers)
  - safety and maintenance check list
  - use of safety apparatus
  - proper methods and techniques in relation to situation
- preventive maintenance on equipment
  - lubrication
  - power train
  - sharpening blades (rotary blades)

Part III. Landscape Construction

Chapter I: Blueprint Reading and Laying Out Blueprint Reading

- Legend
  - map orientation
  - scale

- Construction Symbols
- Paving Symbols
- Boundries Symbols
- Contour Lines
- Utilities Symbols
- Plant Symbols

  - trees-

    - deciduous
    - coniferous

  - shrubs-

    - deciduous
    - coniferous
    - broadleaf

  - beds

- Laving Out Plans

  - use of blueprints
  - throwing a tape
  - marking and staking (large and specimens plant material)
  - cutting beds
    - placing of plant material

Chapter 2: Construction; Drainage, Irrigation, and Grading

- Drainage

  - tiling
  - french drains

- irrigation

  - parts nomenclature
  - pipe fitting (metal)
  - pipe fitting (poly)
  - lead assembly
  - drainage

- Grading

  - tools and equipment

    - Abney level
    - Builders level
    - Philadelphia Reading Rod

- sub or rough
    - contour lines (map)
    - contour staking
    - contour establishment
- final
    - use of soil conditioners and amendments
    - use of grading tools
        - iron rake
        - grading rake
        - shovel
    - use of equipment
        - Abney level
        - Builders level
        - Philadelphia Reading Rod

Chapter 3: Construction of Plantings

- Soil Modification
    - soil conditioners
    - soil amendments and fertilizers
- Proper handling of Plant Material
    - moving and transplanting
    - watering before planting
- Digging
    - proper hole size and shape according to AAN standards
    - filling
        - adding organic matter
        - watering
        - replacing soil around root ball
        - making "save on"
- Staking and Wrapping
    - trees with a 2" caliber or less
        - double stake
        - wire and hose
    - trees with a longer than 2" caliber
        - double stake or thicker stake
        - wire and hose

- wrapping
  - method
  - materials
  - functions

- Mulching
  - types available
  - special preparation for mulching
  - when and where to mulch
  - depth needed for proper coverage

Chapter 4: Construction of Lawns

- Drainage
- Irrigation
- Soil Sampling
- Soil Modifications
  - conditioners
  - amendments
  - fertilizers and lime

- Grading
- Seeding
  - equipment selection (hopper seeder spreader, broad east seeder spreader, brillion seeder spreader
  - variety of seed in relation to specific condition
  - seeding rate
  - rolling
  - mulching (straw, peat, netting, hydro-mulching)
  - watering

- Vegatative
  - sodding
    - variety of sod in relation to specific conditions
    - proper installation methods and techniques
    - rolling
    - watering
  - other methods
    - spriging
    - stolonization
    - plugging

Chapter 5: Landscape Structures

Traffic areas (drives, walks, steps, ramps, landings, and patios)

concrete asphalt bricks patio blocks flag stone mulches rail road ties stone tile wood	Proper methods, procedures, and techniques applicable in constructing with these materials

Retaining walls (uses: tree walls, planters and terraces)

dry

stone rail road tie brick	Proper methods, procedures, and techniques applicable in constructing with these materials

masonry

stone brick poured concrete concrete block	Proper methods, procedures, and techniques applicable in constructing with these materials

Screen and fences

- wood
  - setting posts
  - setting posts in concrete
  - section placing
- metal
  - setting posts
  - setting posts in concrete
  - section placing

Ornamental Pools

- forms
- mixing
- finishing techniques

Chapter 6: Safe Equipment Operation and Preventive Maintenance

Rototillers

- safety and maintenance check list
- use of safety apparatus
- proper methods and techniques in relation to situation

Sod cutters

- safety and maintenance check list
- use of safety apparatus
- proper methods and techniques in relation to situation

Seeders

- safety and maintenance check list
- use of safety apparatus
- proper methods and techniques in relation to situation

Garden tractor

- safety and maintenance check list
- use of safety apparatus
- proper methods and techniques in relation to situation

Preventive Maintenance on Equipment

- lubrication
- power train

Part IV. Ornamental Plant Materials

Chapter 1: Plant Characteristics

- Hardiness Zone
- Form and Size at Maturity
- Foliage (type, size, time)
- Flower and Fruiting (type, size, time)
- Growth rate
- Value and Usage

Chapter 2: Plant Classification

- Trees, shrubs, vines, groundcovers
- Deciduous
- Evergreen
    - needled
    - broad leaved
- Small, medium, large

Chapter 3: Plant Identification

- Visual Appearance (general)
- Use of keys (Binomial system of nomenclature)

Appendices

A. Trouble shooting plant problems
B. Trouble shooting construction problems
C. Commonly used ornamental plants
D. Plant substitutes